2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Montgomery

STREAM NAME: North Fork Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L02R_RNF03A02 **TMDL MAP ID:** VAW-L02R-01

SEGMENT SIZE: 6.56 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Wilson Creek mouth on the N.F. Roanoke R.

RIVER MILE: 15.21

LATITUDE: 37.18750 **LONGTITUDE:** -80.35236

DOWNSTREAM LIMIT:

DESCRIPTION: Unnamed Tributary in Ironto

RIVER MILE: 8.65

LATITUDE: 37.21639 **LONGTITUDE:** -80.27680

The upper limit is located at the mouth of Wilson Cr. on the North Fork Roanoke River. The downstream segment end is at an unnamed tributary in the community of Ironto.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Metals in fish tissue	NPS - Urban
	Unknown

SUMMARY:

Swimming Use
Station 4ARNF015.09, located just downstream of the Rt. 603 crossing in Montgomery County, records four of nine samples exceeding the fecal coliform bacteria instantaneous criterion of 1000 n/100 ml. The swimming use is not supported in this segment.

Fish Consumption Use
A 1999 fish tissue collection at 4ARNF013.60 finds the waters fully supporting, but threatened for the fish consumption use due to exceedance of the human health-risk carcinogenic screening value (SV) of 0.072 parts per million (ppm) for arsenic (As). Two species exceed the SV. Fish tissue results reveal a Green Sunfish at 0.51 ppm and a Redhorse Sucker at 1.3 ppm causing the waters to be 'Threatened' per guidance Table 6b.

Aquatic Life Use
A 1999 sediment collection made at 4ARNF013.60 (Off Rt. 603 at Ford n/NS Railroad) finds an exceedance of the 1995 NOAA sediment effect range-median (ER-M) screening value (SV) in parts per billion (ppb) for DDT at 21.98 ppb (SV= 7 ppb).

Swimming Use
The source of the impairment is believed to be nonpoint source pollution due to urban activities. There are some agricultural activities in this area as well. This segment is downstream of the Wilson Creek segment that does not support the swimming use. Effects of Wilson Creek segment may contribute to the exceedances in the N.F. Roanoke R.

Fish Consumption Use
The source of the arsenic in fish tissue is unknown.

Aquatic Life Use
The source of the sediment organic exceedance is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Montgomery

STREAM NAME: North Fork Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L02R_RNF03A02 **TMDL MAP ID:** VAW-L02R-01

SEGMENT SIZE: 6.56 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Wilson Creek mouth on the N.F. Roanoke R.

RIVER MILE: 15.21

LATITUDE: 37.18750 **LONGTITUDE:** -80.35236

DOWNSTREAM LIMIT:

DESCRIPTION: Unnamed Tributary in Ironto

RIVER MILE: 8.65

LATITUDE: 37.21639 **LONGTITUDE:** -80.27680

The upper limit is located at the mouth of Wilson Cr. on the North Fork Roanoke River. The downstream segment end is at an unnamed tributary in the community of Ironto.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Metals in fish tissue	NPS - Urban
	Unknown
Organics in sediment	

SUMMARY:

Swimming Use
Station 4ARNF015.09, located just downstream of the Rt. 603 crossing in Montgomery County, records four of nine samples exceeding the fecal coliform bacteria instantaneous criterion of 1000 n/100 ml. The swimming use is not supported in this segment.

Fish Consumption Use
A 1999 fish tissue collection at 4ARNF013.60 finds the waters fully supporting, but threatened for the fish consumption use due to exceedance of the human health-risk carcinogenic screening value (SV) of 0.072 parts per million (ppm) for arsenic (As). Two species exceed the SV. Fish tissue results reveal a Green Sunfish at 0.51 ppm and a Redhorse Sucker at 1.3 ppm causing the waters to be 'Threatened' per guidance Table 6b.

Aquatic Life Use
A 1999 sediment collection made at 4ARNF013.60 (Off Rt. 603 at Ford n/NS Railroad) finds an exceedance of the 1995 NOAA sediment effect range-median (ER-M) screening value (SV) in parts per billion (ppb) for DDT at 21.98 ppb (SV= 7 ppb).

Swimming Use
The source of the impairment is believed to be nonpoint source pollution due to urban activities. There are some agricultural activities in this area as well. This segment is downstream of the Wilson Creek segment that does not support the swimming use. Effects of Wilson Creek segment may contribute to the exceedances in the N.F. Roanoke R.

Fish Consumption Use
The source of the arsenic in fish tissue is unknown.

Aquatic Life Use

The source of the sediment organic exceedance is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Montgomery

STREAM NAME: Cedar Run

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L02R_CDN01A02 **TMDL MAP ID:**

SEGMENT SIZE: 3.2 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Cedar Run headwaters in Blacksburg.

RIVER MILE: 3.20

LATITUDE: 37.20861 **LONGTITUDE:** -80.39804

DOWNSTREAM LIMIT:

DESCRIPTION: Cedar Run mouth on Wilson Creek

RIVER MILE: 0.00

LATITUDE: 37.18944 **LONGTITUDE:** -80.35883

The segment extends from its headwaters downstream to its confluence with Wilson Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Chlordane	Unknown

SUMMARY:

Sediment collections made at 4ACDN002.20 found an exceedance of the 1995 NOAA sediment effect range-median (ER-M) screening value (SV= 6) in parts per billion for chlorodane at 12.86 ppb. Station 4ACDN002.20 is located near the mouth of Cedar Run in Montgomery County.

The exact source of the chlordane is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Salem, City of

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L03R_ROA02A00 **TMDL MAP ID:** VAW-L03R-03

SEGMENT SIZE: 6.06 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Big Bear Rock Br. mouth on the Roanoke R.

RIVER MILE: 217.73

LATITUDE: 37.26861 **LONGTITUDE:** -80.12870

DOWNSTREAM LIMIT:

DESCRIPTION: Rt. 11 Bridge nearest Rt. 419.

RIVER MILE: 211.67

LATITUDE: 37.27111 **LONGTITUDE:** -80.03884

The segment extends from the Big Bear Rock Branch mouth on the Roanoke River at river mile 217.73 (Glenvar Quad) downstream to the Rt. 11 Bridge nearest Rt. 419 crossing the Roanoke at river mile 211.67 (Salem Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Temperature	NPS - Urban
	Natural
Fish Tissue - PCBs / Organics in sediment	Unknown

SUMMARY:

Monitoring station locations are: 4AROA227.42 (Rt. 773 in Montgomery County), 4AROA219.99 (Rt. 612 Bridge - at Wabum), 4AROA216.33 Roanoke R., (Salem, Below Koppers downstream of Rts. 760 & 639 junction) and 4AROA212.17 (Riverside Drive - Rt. 11 Bridge nearest Rt. 419)

Swimming Use
The basis of the swimming use impairment are data collected from two sites along the Roanoke River. Station 4AROA212.17 records six exceedances of the fecal coliform bacteria criterion of 1000 n/100 ml from 59 samples (Partial Support). Fifteen of 59 samples exceed the criterion at station 4AROA202.20 (Not Supporting). The 1998 impaired swimming use segment now extends from the Big Bear Branch mouth (37°16'07" / 080°07'42") on the Roanoke River downstream to the Roanoke Regional STP outfall. A total of 17.13 miles.

Aquatic Life Use
Exceedance of the water quality standards (WQS) Class V waters temperature criterion of 21 °C causes an overlapping partial support of the aquatic life use. Station 4AROA227.42 records seven exceedances from 59 measurements in this stockable trout water. The seven exceedances ranged from 21.2 to 23.1 °C and occur in the summer months of June, July and August. Downstream station 4AROA212.17 reports 11 of 67 temperature measurements exceed the criterion. Maxima ranged from 22.5 to 24.5 °C. Two exceedances occur in May 1998 and 2000. The remainder occur in June, July and August from 1997 through 2000. A separate Part 1C (natural) fact sheet describes the 15.31 mile partially supporting aquatic life use segment that extends from the confluence of the North and South Forks of the Roanoke River downstream to the Rt. 11/419 crossing (37°16'18 / 080°02'20").

The segment is also fully supporting, but threatened for the aquatic life use for 17.13 miles. Station 4A212.17 notes a 1999 exceedance of the 1995 NOAA effect range- median (ER-M) sediment screening value for chlorodane (SV=6.0 ppb) at 10 ppb. Station 4AROA202.20 records 50 ppb for chlorodane. Station 4AROA216.33 finds a 1999 exceedance of DDT (SV= 7) at 11.28 ppb.

Fish Consumption Use
The waters only partially support the fish consumption use due to exceedance of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs). A Tier 2 fish tissue study (1993 Roanoke River Basin Study DEQ, Water Research & Standards, Richmond, Virginia) found PCBs in excess of the SV from one species; Bluehead Chub (87.9 max.) at 4AROA219.99. The maximum was recorded in one fish from nine total fish collected for the species. A total of 39 fish were collected. Other species were: Smallmouth Bass, Rock Bass, Redbrest Sunfish and Redhorse Sucker. All were below the SV.

1999 fish tissue collections at Station 4AROA216.33 found PCBs in excess of the SV from one species; Carp @192 ppb. 4AROA206.80 records PCB in tissue from one species; Rock Bass @130 ppb. Monitoring of fish tissue and sediment should continue.

This fact sheet describes the a 7.26 mile portion of the total riverine partially supporting fish consumption use impairment (28.35 miles). The total impairment extends from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) Advisory. Fish tissue concentrations are below the VDH 600 ppb level of concern. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us.

Swimming Use
The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use
The source of the temperature exceedances are believed to be natural due to solar radiation. Exceedances occur upstream of any heat sources. There are no known sources of heat contributing to impairment.

The source of the sediment chlorodane exceedance is unknown.

Fish Consumption Use
The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made chemicals that can contain up to 209 individual compounds. The Virginia Department of Health (VDH) review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Salem, City of

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L03R_ROA01A00 **TMDL MAP ID:** VAW-L03R-04

SEGMENT SIZE: 1.2 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Rt. 11 Bridge nearest Rt. 419.

RIVER MILE: 211.67

LATITUDE: 37.27111 **LONGTITUDE:** -80.03884

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence of Mason Cr. on the Roanoke R.

RIVER MILE: 210.47

LATITUDE: 37.26944 **LONGTITUDE:** -80.02428

The segment begins at the Rt. 11 Bridge nearest Rt. 419 crossing the Roanoke River extending downstream to the Mason Creek mouth on the Roanoke at river mile 210.47 (Salem Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - PCBs	NPS - Urban
	Unknown
Organics in sediment	

SUMMARY:

Monitoring station locations are: 4AROA227.42 (Rt. 773 in Montgomery County), 4AROA219.99 (Rt. 612 Bridge - at Wabum), 4AROA216.33 Roanoke R., (Salem, Below Koppers downstream of Rts. 760 & 639 junction) and 4AROA212.17 (Riverside Drive - Rt. 11 Bridge nearest Rt. 419)

Swimming Use
The basis of the swimming use impairment are data collected from two sites along the Roanoke River. Station 4AROA212.17 records six exceedances of the fecal coliform bacteria criterion of 1000 n/100 ml from 59 samples (Partial Support). Fifteen of 59 samples exceed the criterion at station 4AROA202.20 (Not Supporting). The 1998 impaired swimming use segment now extends from the Big Bear Branch mouth (37°16'07" / 080°07'42") on the Roanoke River downstream to the Roanoke Regional STP outfall. A total of 17.13 miles.

Fish Consumption Use
The waters only partially support the fish consumption use due to exceedance of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs). A Tier 2 fish tissue study (1993 Roanoke River Basin Study DEQ, Water Research & Standards, Richmond, Virginia) found PCBs in excess of the SV from one species; Bluehead Chub (87.9 max.) at 4AROA219.99. The maximum was recorded in one fish from nine total fish collected for the species. A total of 39 fish were collected. Other species were: Smallmouth Bass, Rock Bass, Redbrest Sunfish and Redhorse Sucker. All were below the SV.

1999 fish tissue collections at Station 4AROA216.33 found PCBs in excess of the SV from one species; Carp @192 ppb. 4AROA206.80 records PCB in tissue from one species; Rock Bass @130 ppb. Monitoring of fish tissue and sediment should continue.

This fact sheet describes the a 7.26 mile portion of the total riverine partially supporting fish consumption use impairment (28.35 miles). The total impairment extends from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream

through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) Advisory. Fish tissue concentrations are below the VDH 600 ppb level of concern. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us.

Aquatic Life Use
The segment is also fully supporting, but threatened for the aquatic life use for 17.13 miles. Station 4A212.17 notes a 1999 exceedance of the 1995 NOAA effect range- median (ER-M) sediment screening value for chlorodane (SV=6.0 ppb) at 10 ppb. Station 4AROA202.20 records 50 ppb for chlorodane. Station 4AROA216.33 finds a 1999 exceedance of DDT (SV= 7) at 11.28 ppb.

Swimming Use
The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Fish Consumption Use
The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made chemicals that can contain up to 209 individual compounds. The Virginia Department of Health (VDH) review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Aquatic Life Use
The source of the sediment chlorodane exceedance is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke County, Salem, Roanoke, Cities of

STREAM NAME: Peters Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_PEE01A02 **TMDL MAP ID:** VAW-L04R-06

SEGMENT SIZE: 7.17 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Peters Cr. Headwaters

RIVER MILE: 7.17

LATITUDE: 37.34722 **LONGTITUDE:** -80.03000

DOWNSTREAM LIMIT:

DESCRIPTION: Peters Cr. mouth on the Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.27306 **LONGTITUDE:** -79.99278

The segment begins in the headwaters of Peters Creek (Salem Quad) extending downstream to the Peters Creek confluence on the Roanoke River (Roanoke Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened, Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Organics in sediment - 2.53 miles	NPS - Urban
Fish Tissue - PCBs - 2.53 miles	Unknown

SUMMARY:

Swimming Use
A special study (SS 975101) station 4APEE001.04 (SS 975101) found exceedances of the fecal coliform bacteria geometric mean criterion of 200 n/100 ml in two of three calculations derived from the special study data. Only one exceedance from seven collections exceeded the instantaneous fecal coliform bacteria 1000 n/100 ml criterion.

Ambient program water samples found only one exceedance of the instantaneous criterion from 23 samples collected at 4APEE001.04. The swimming use is not supported for 7.17 miles in this segment based on the exceedance of the fecal coliform geometric mean criterion.

Station 4APEE001.04 is located at the Shenandoah Avenue Bridge crossing Peters Creek. A portion of the overall segment is fully supporting, but threatened for both the aquatic life and fish consumption uses for 2.53 miles. The 'Threatened' segment extends from the Peters Creek confluence with the Roanoke River upstream 2.53 miles as described below.

Aquatic Life Use
A 1999 sediment collection exceeds the 1995 NOAA effect range median (ER-M) sediment screening value (SV) in parts per billion for chlorodane at 17.04 ppb. The SV for chlorodane is 6.0 ppb. Pyrene (SV= 2600 ppb), benzo(a) pyrene (SV=1600 ppb), benz(a) anthracene (SV=1600 ppb) and dibenz(a,h) anthracene (SV= 260) are each in excess of their respective SVs. Values are pyrene 3989.83, benzo(a) pyrene 2002.57, benz(a) anthracene 1696.19 and dibenz(a,h) anthracene 542.96. The aquatic life use is 'Threatened' for 2.53 miles.

Fish Consumption Use
Fish tissue collections at 4APEE001.04 found polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) from one species; Rock Bass @ 68.2 ppb. The fish consumption use is therefore 'Threatened' for 2.53 miles based on these results.

Swimming Use
The source of the fecal coliform bacteria is believed to be urban nonpoint source pollution.

Aquatic Life Use
The source of sediment exceedances are unknown.

Fish Consumption Use
The exact source of the PCB contamination is unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. The VDH review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Roanoke, City of

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_ROA02A00 **TMDL MAP ID:** VAW-L04R-03

SEGMENT SIZE: 4.14 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Backwaters of the Niagara Impoundment

RIVER MILE: 199.14

LATITUDE: 37.25889 **LONGTITUDE:** -79.88714

DOWNSTREAM LIMIT:

DESCRIPTION: Back Cr. mouth on the Roanoke R.

RIVER MILE: 195.0

LATITUDE: 37.22528 **LONGTITUDE:** -79.84737

The upper limit of the segment is the backwaters of the Niagara Impoundment (river mile 199.14) extending downstream to the confluence of Back Creek on the Roanoke River (river mile 195.00).

Note: Additional impaired parameters cause the 1998 fecal coliform/benthic listed segment to be modified with the 2002 Impaired Waters listing.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Organics in sediment	NPS - Urban
	Unknown

SUMMARY:

Swimming Use
The swimming use is impaired based on fecal coliform bacteria data collected at two sites. Fifteen of 59 samples exceed the 1000 n/100 ml fecal coliform criterion at station 4AROA202.20 (not supporting). A downstream station 4AROA196.05 at McVeigh Ford located in Watershed (VAW-L12L) records fecal coliform bacteria exceedances in five of 23 samples (partially supporting). Station 4ABAA002.61 on Back Creek records only one exceedance from 23 samples. Back Creek enters the Roanoke River upstream of the McVeigh Ford station.

Fish Consumption Use
The fish consumption use is only partially supporting based on fish tissue exceedances of the EPA human health-risk based carcinogenic screening value (SV) of 54 ppb for polychlorinated biphenyls (PCBs). Stations 4AROA199.60 (Above Niagara Dam), 4AROA199.20 (Blue Ridge Parkway Bridge - Niagara) and a downstream station 4AROA196.05 (McVeigh Ford) in watershed VAW-L12L record values in excess of the SV.

A Level 2 fish tissue study (1993 Roanoke River Basin Study, DEQ, Water Research & Standards, Richmond, Virginia) found polychlorinated biphenyls (PCBs) in four of four species 4AROA199.20. Analysis of 40 fish provides the following results in ppb: Smallmouth Bass (237 max.), Redbreast Sunfish (80.1 max.), Redhorse Sucker (317.7 max.) and Carp (617.6 max.). Chlorodane was also found in Carp tissue (93.9 max.). The EPA carcinogenic SV for chlorodane is 310 ppb.

Station 4AROA199.60 reports PCB values for three species from 1999 collections. They are: Largemouth Bass 272, Redhorse Sucker 101, and Carp 489 ppb. PCB sediment collections at the site record a single value of 133 ppb, not in excess of the 1995 NOAA ER-M SV of 180.

Station 4AROA196.05-TL records 1999 values in excess of the fish tissue PCB SV for four species: Largemouth Bass @ 73.7,

Carp @ 124, Gizzard Shad @ 386 and Redhorse Sucker @ 89.9 ppb.

This fact sheet describes a 4.14 mile riverine portion of the total partially supporting fish consumption use impairment. The entire impairment extends from Dixie Caverns - VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) Advisory. Fish tissue concentrations are below the VDH 600 ppb level of concern. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us

Aquatic Life Use
The aquatic life use is 'Threatened' based on sediment data from two sites. Station 4AROA202.20 records 50 and station 4AROA199.60 (Niagara Impoundment) finds 26.86 ppb (parts per billion) in the sediment for chlorodane. The 1995 NOAA effect range median (ER-M) chlorodane screening value (SV) is 6 ppb. DDT (SV= 7 ppb) also is in excess of the SV at 8.19 ppb.

Swimming Use
The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use
Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke R.

The source of the sediment chlorodane exceedance is unknown.

Fish Consumption Use
The exact sources of the PCB and chlorodane contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. The VDH review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Roanoke, City of

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_ROA05A00 **TMDL MAP ID:** VAW-L04R-02

SEGMENT SIZE: 1.46 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Roanoke R. at the Roanoke Regional STP outfall

RIVER MILE: 200.60

LATITUDE: 37.26667 **LONGTITUDE:** -79.91083

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of the Niagara Impoundment

RIVER MILE: 199.14

LATITUDE: 37.25889 **LONGTITUDE:** -79.88714

The upper limit of the segment is the Roanoke Regional STP (river mile 200.60 outfall extending downstream to the backwaters of the Niagara Impoundment at river mile 199.14. The entire segment is on the Roanoke Quad.

Note: Additional impaired parameters cause the 1998 fecal coliform/benthic listed segment to be modified with the 2002 Impaired Waters listing.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Organics in sediment	NPS - Urban
	NPS Urban
	Unknown

SUMMARY:

Swimming Use
The swimming use is impaired based on fecal coliform bacteria data collected at two sites. Fifteen of 59 samples exceed the 1000 n/100 ml fecal coliform criterion at station 4AROA202.20 (not supporting). A downstream station 4AROA196.05 at McVeigh Ford located in Watershed (VAW-L12L) records fecal coliform bacteria exceedances in five of 23 samples (partially supporting). Station 4ABAA002.61 on Back Creek records only one exceedance from 23 samples. Back Creek enters the Roanoke River upstream of the McVeigh Ford station.

Aquatic Life Use
The aquatic life use is only partially supported for 1.46 miles; from the Roanoke Regional STP outfall downstream to the backwaters of the Niagara Impoundment. The impairment is based on biological monitoring at three sites 4AROA202.20 (14th Street Bridge - above the Roanoke Regional STP), 4AROA205.67 (Rivers Edge Park below Franklin Rd. Br.), 4AROA206.03 (Smith Park) and 4AROA206.95 (Wasena Park). Each site reports the benthic community as moderately impaired.

Station 4AROA202.20 (five surveys) finds in a fall 2000 survey, the dominant family (40% of total individuals) are the pollution tolerant midge larvae, family Chironomidae. Less than 4% of all individuals collected were mayflies and approximately 50% of stream substrate was covered with heavy growths of filamentous algae. Stations 4AROA205.67 and 4AROA206.03 both report moderate impairment from a total of four surveys. Six surveys at 4AROA206.95 also find moderate impairment. The entire General Standard (Benthic) impairment extends from the mouth of Mason Creek (VAW-L03R) downstream to the backwaters of the Niagara Impoundment (VAW-L04R), a total of 11.33 miles.

The aquatic life use is also 'Threatened' based on sediment data from two sites. Station 4AROA202.20 records 50 and station 4AROA199.60 (Niagara Impoundment) finds 26.86 ppb (parts per billion) in the sediment for chlorodane. The 1995 NOAA

effect range median (ER-M) chlorodane screening value (SV) is 6 ppb. DDT (SV= 7 ppb) also is in excess of the SV at 8.19 ppb.

Fish Consumption Use
The fish consumption use is only partially supporting based on fish tissue exceedances of the EPA human health-risk based carcinogenic screening value (SV) of 54 ppb for polychlorinated biphenyls (PCBs). Stations 4AROA199.60 (Above Niagara Dam), 4AROA199.20 (Blue Ridge Parkway Bridge - Niagara) and a downstream station 4AROA196.05 (McVeigh Ford) in watershed VAW-L12L record values in excess of the SV.

A Level 2 fish tissue study (1993 Roanoke River Basin Study, DEQ, Water Research & Standards, Richmond, Virginia) found polychlorinated biphenyls (PCBs) in four of four species 4AROA199.20. Analysis of 40 fish provides the following results in ppb: Smallmouth Bass (237 max.), Redbreast Sunfish (80.1 max.), Redhorse Sucker (317.7 max.) and Carp (617.6 max.). Chlorodane was also found in Carp tissue (93.9 max.). The EPA carcinogenic SV for chlorodane is 310 ppb.

Station 4AROA199.60 reports PCB values for three species from 1999 collections. They are: Largemouth Bass 272, Redhorse Sucker 101, and Carp 489 ppb. PCB sediment collections at the site record a single value of 133 ppb, not in excess of the 1995 NOAA ER-M SV of 180.

Station 4AROA196.05-TL records 1999 values in excess of the fish tissue PCB SV for four species: Largemouth Bass @ 73.7, Carp @ 124, Gizzard Shad @ 386 and Redhorse Sucker @ 89.9 ppb.

This fact sheet describes a riverine portion (1.46 miles) of the total partially supporting fish consumption use impairment (28.35). The entire impairment extends from near Dixie Caverns - VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) Advisory. Fish tissue concentrations are below the VDH 600 ppb level of concern. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us

Swimming Use
The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use
Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke R.

The source of the sediment chlorodane exceedance is unknown.

Fish Consumption Use
The exact sources of the PCB and chlorodane contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. The VDH review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Salem, Roanoke, Cities of

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_ROA08A00 **TMDL MAP ID:** VAW-L04R-01

SEGMENT SIZE: 9.87 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Confluence of Mason Cr. on the Roanoke R.

RIVER MILE: 210.47

LATITUDE: 37.23722 **LONGTITUDE:** -80.21395

DOWNSTREAM LIMIT:

DESCRIPTION: Roanoke Regional STP outfall on the Roanoke R.

RIVER MILE: 200.60

LATITUDE: 37.26667 **LONGTITUDE:** -79.91083

The segment begins at the Mason Creek mouth on the Roanoke (river mile 210.47 on the Salem Quad) and extends downstream to the Roanoke Regional Water Pollution Control Plant at river mile 200.60 (Roanoke Quad).

Note: Additional impaired parameters cause the 1998 fecal coliform/benthic listed segment to be modified with the 2002 Impaired Waters listing.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
General Standard (Benthic)	NPS - Urban
	Natural / NPS Urban
Fish Tissue - PCBs / Organics in sediment	Unknown

SUMMARY:

Monitoring station locations are: 4AROA219.99 (Rt. 612 Bridge - at Wabum), 4AROA216.33 Roanoke R., (Salem, Below Koppers downstream of Rts. 760 & 639 junction), 4AROA212.17 (Riverside Drive - Rt. 11 Bridge nearest Rt. 419), 4AROA206.03 (Smith Park), 4AROA205.67 (Riversedge Park - Below Franklin Rd. Br.) and 4AROA202.20 (14th Street Bridge - above STP).

Swimming Use
The basis of the swimming use impairment are data collected from two sites along the Roanoke River. Station 4AROA212.17 records six exceedances of the fecal coliform bacteria criterion of 1000 n/100 ml from 59 samples (Partial Support). Fifteen of 59 samples exceed the criterion at station 4AROA202.20 (Not Supporting). The 1998 impaired swimming use segment now extends from the Big Bear Branch mouth (37°16'07" / 080°07'42") on the Roanoke River downstream to the Ronaoke Regional STP outfall. A total of 17.13 miles.

Aquatic Life Use
The aquatic life use is only partially supported based on biological monitoring at three sites 4AROA206.03, 4AROA205.67 and 4AROA202.20. Each site reports the benthic community as moderately impaired.

Station 4AROA202.20 (five surveys) finds in a fall 2000 survey, the dominant family (40% of total individuals) are the pollution tolerant midge larvae, family Chironomidae. Less than 4% of all individuals collected were mayflies and approximately 50% of stream substrate was covered with heavy growths of filamentous algae. Stations 4AROA205.67 and 4AROA206.03 both report moderate impairment from a total of four surveys. Six surveys at 4AROA206.95 also find moderate impairment. The WQS General Standard (Benthic) is contravened for 9.87 miles in this segment based on these data. The entire General Standard (Benthic) impairment extends from the mouth of Mason Creek (VAW-L03R) downstream to the backwaters of the

Niagara Impoundment (VAW-L04R), a total of 11.33 miles.

The segment is also fully supporting, but threatened for the aquatic life use. Station 4A212.17 notes a 1999 exceedance of the 1995 NOAA effect range- median (ER-M) sediment screening value for chlorodane (SV=6.0 ppb) at 10 ppb. Station 4AROA202.20 records 50 ppb for chlorodane. Station 4AROA216.33 finds a 1999 exceedance of DDT (SV= 7) at 11.28 ppb. The entire aquatic life use 'Threatened' segment is a total of 17.13 miles.

Fish Consumption Use
The waters only partially support the fish consumption use due to exceedance of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs). A Tier 2 fish tissue study (1993 Roanoke River Basin Study DEQ, Water Research & Standards, Richmond, Virginia) found PCBs in excess of the SV from one species; Bluehead Chub (87.9 max.) at 4AROA219.99. The maximum was recorded in one fish from nine total fish collected for the species. A total of 39 fish were collected. Other species were: Smallmouth Bass, Rock Bass, Redbrest Sunfish and Redhorse Sucker. All were below the SV.

1999 fish tissue collections at Station 4AROA216.33 found PCBs in excess of the SV from one species; Carp @192 ppb. 4AROA206.80 records PCB in tissue from one species; Rock Bass @130 ppb. Monitoring of fish tissue and sediment should continue.

This fact sheet describes a riverine portion (9.87 miles) of the total partially supporting fish consumption use impairment (28.35 miles). The impairment extends from Dixie Caverns in VAW-L03R (37°15'07" / 080°10'20") on downstream through watershed VAW-L04R into Smith Mountain Lake VAW-L12L (37°13'57" / 079°50'51") ~1 mile below the Hales Ford Bridge. The total mileage for the fish consumption impairment is 50.01 miles or 28.35 Roanoke River miles and 3249 lake acres.

There is no Virginia Department of Health (VDH) Advisory. Fish tissue concentrations are below the VDH 600 ppb level of concern. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us.

Swimming Use
The source of the fecal coliform bacteria is believed to be from nonpoint source runoff in the urban area. The Roanoke Regional WPCP reached hydraulic capacity in 1985. At that point it began improving the collection system that transports wastewater to the plant. A new interceptor along the Roanoke River is complete with other improvements to the system along Tinker Creek also completed.

Aquatic Life Use
Benthic impairments are believed due to urban nonpoint source runoff and sedimentation as a result of interceptor replacement along the Roanoke R.

The source of the sediment chlorodane exceedance is unknown.

Fish Consumption Use
The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made chemicals that can contain up to 209 individual compounds. The Virginia Department of Health (VDH) review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Salem, City of

STREAM NAME: Mason Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_MSN01A00 **TMDL MAP ID:** VAW-L04R-05

SEGMENT SIZE: 7.61 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Near the Mason Cove community.

RIVER MILE: 7.61

LATITUDE: 37.37306 **LONGTITUDE:** -80.08250

DOWNSTREAM LIMIT:

DESCRIPTION: Mason Cr. mouth on the Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.26944 **LONGTITUDE:** -80.02444

The segment begins near the Mason Cove Community, river mile 7.61 and extends downstream to the mouth of Mason Creek on the Roanoke River. The entire segment is on the Salem Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Organics in sediment	NPS - Urban
	Unknown

SUMMARY:

The following are locations of the stations discussed below: 4AMSN000.60 (Near A.R. Burton Tech.), 4AMSN000.67 (Boulevard), 4AMSN002.36 (East Main St.-Rt. 460/11), 4AMSN003.36 (Garst St), 4AMSN006.92 (Carvin Cove Rd-Rt. 604), and 4AMSN012.62 (Bradshaw Rd-Rt. 622).

Swimming Use
A special study (SS 975101) found exceedances of the fecal coliform bacteria geometric mean criterion of 200 n/100 ml at four of five stations on Mason Creek. Stations 4AMSN000.67, 4AMSN002.36, 4AMSN003.36 and 4AMSN006.92 each exceed the criterion in three of three calculations derived from the special study data. Exceedances of the instantaneous fecal coliform bacteria criterion of 1000 n/100 ml occur at all but station 4AMSN002.36. Station 4AMSN012.62 had no exceedances of either fecal coliform bacteria criteria. The waters as described above therefore do not support the swimming goal of the CWA.

Aquatic Life Use
The segment is also fully supporting, but threatened for the aquatic life use. Station 4AMSN000.60 finds a 1999 exceedance of the 1995 NOAA effect range- median (ER-M) sediment screening value (SV) in parts per billion for pyrene (SV= 2600 ppb) and dibenz(ah) anthracene (SV= 260 ppb). The station reports values of 3029.81 for pyrene and 291.96 for dibenz(ah) anthracene. The waters are 'Threatened' as a result.

Swimming Use
Urban nonpoint source runoff is the primary source of the fecal coliform bacteria impairment.

Aquatic Life Use
The source(s) of organic exceedances are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Roanoke, City of

STREAM NAME: Murray Run

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L04R_MUR01A00 **TMDL MAP ID:**

SEGMENT SIZE: 3.23 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Murray Run headwaters

RIVER MILE: 3.23

LATITUDE: 37.22500 **LONGTITUDE:** -79.99103

DOWNSTREAM LIMIT:

DESCRIPTION: Murray Run mouth on the Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.25750 **LONGTITUDE:** -79.95698

The headwaters of Murray Run begin on the Garden City Quad. The segment extends from the headwaters downstream to the Murray Run confluence on the Roanoke River (Roanoke Quad).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened (Citizen)

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Citizen monitoring	Unknown

SUMMARY:

Citizen benthic monitoring data report a medium probability for adverse conditions at station 4AMUR-B-SOS (Fishburn Park), while station 4AMUR-A-SOS (Lakewood Park) reports a low probability of adverse conditions for the biota. Field chemical data at station 4AMUR001.63 (Fishburn Park) found no excursions of dissolved oxygen (DO), temperature or pH from three samples. The waters of this segment are fully supporting, but threatened until verification of citizen benthic data can be conducted.

Verification of the citizen benthic assessment needs to be conducted prior to determining the source and degree of impact to the benthic community.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Botetourt, Roanoke

STREAM NAME: Carvin Cove Reservoir - Carvin Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L05L_CRV01A02 **TMDL MAP ID:** VAW-L05L-01N

SEGMENT SIZE: 630 - Acres

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Backwaters of Carvin Cove Reservoir

RIVER MILE: 9.80

LATITUDE: 37.40361 **LONGTITUDE:** -79.97900

DOWNSTREAM LIMIT:

DESCRIPTION: Carvin Cove Reservoir Dam

RIVER MILE: 5.86

LATITUDE: 37.36917 **LONGTITUDE:** -79.95827

The segment encompasses the whole of Carvin Cove Reservoir

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus	Natural/Stratification
	Unknown

SUMMARY:

Bottom layer: Two of 11 samples exceed the lake total phosphorus threshold of 0.05 mg/l at station 4ACRV006.19-BL (Carvin Cove Dam). 4ACRV006.19-BL records one value at 0.09 (May 1999) and the second at 0.07 mg/l (October 2000). The aquatic life use is 'Threatened' based on these results. A separate Part 3 fact sheet describes the threatened total phosphorus aquatic life use.

Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. 4ACRV006.19-BL reports eight excursions from 11 measurements. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs.

The source of the total phosphorus excursions is unknown.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Botetourt, Roanoke, City of

STREAM NAME: Tinker Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L05R_TKR03A00 **TMDL MAP ID:** VAW-L05R-01

SEGMENT SIZE: 19.38 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2001 - 2004

UPSTREAM LIMIT:

DESCRIPTION: Tinker Cr. headwaters off Rt. 779

RIVER MILE: 19.38

LATITUDE: 37.44778 **LONGTITUDE:** -79.97250

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Tinker Cr. on the Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.26639 **LONGTITUDE:** -79.90500

The upper limit is off Rt. 779 near Mt. Union (Daleville Quad) in the headwaters of Tinker Creek. The downstream limit is at the confluence of Tinker Creek with the Roanoke River.

Note: Slight adjustments in 1998 segment mileage are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:

Metals & Organics in sediment - 11.90 miles

IMPAIRMENT SOURCE

NPS - Urban/Agriculture

Natural

Unknown

SUMMARY:

Swimming Use
The segment brackets station 4ATKR000.69 (Rt. 24 Bridge in Vinton). Exceedances of the fecal coliform bacteria instantaneous criterion of 1000 n/100 ml occur in 18 of 59 ambient samples.

The extent of the segment is further defined by a 1997 special study (SS 975101). These data confirm the continuation of 303(d) listing for fecal coliform bacteria. Special study stations are:

4ATKR000.69 - Rt. 24 Bridge - Vinton
4ATKR001.80 - Rt. 460
4ATKR002.96 - Mason Mill Rd
4ATKR004.04 - Old Mtn Rd (Rt. 605)
4ATKR005.68 - Hollins Rd (Rt. 601)
4ATKR009.30 - Rt. 11 Bridge - near Hollins
4ATKR012.28 - Rt. 816, Botetourt Co.
4ATKR015.88 - Off Rt. 779 - at Gage
4ATKR016.64 - Off Rt. 779, Botetourt Co.

Special Study station data exceed the WQS geometric mean criterion of 200 n/100 ml twice from two calculations. Exceedances of the instantaneous fecal coliform bacteria criterion occur on more than one occasion at each station. Special Study station instantaneous criterion (1000 n/100 ml) exceedances / total observations and geometric mean criterion (200 n/100 ml) exceedances / total calculations are below:

4ATKR000.69 - 3 / 7 instant. geomean - 2 / 2 calcs.
4ATKR001.80 - 2 / 7 instant. geomean - 2 / 2 calcs.
4ATKR009.30 - 2 / 6 instant. geomean - 2 / 2 calcs.
4ATKR012.28 - 2 / 6 instant. geomean - 2 / 2 calcs.
4ATKR015.88 - 5 / 6 instant. geomean - 2 / 2 calcs.
4ATKR016.64 - 5 / 6 instant. geomean - 2 / 2 calcs.

Aquatic Life Use
Station 4ATKR000.69 (Rt. 24 Bridge) records seven exceedances of the 21°C temperature criterion from 59 ambient samples. The exceedances occur in the summer months of June, July and August from 1996-2000. This causes only partial support of the aquatic life use. The maximum temperature occurs in June of 1996 at 23.5 °C. 1997 special study data (SS 975101) from station 4ATKR005.68 records two exceedances from seven samples in this Class V stockable trout water. Both occur in July 1997 at 21.6 and 21.7 °C. The temperature segment extends 11.90 miles from the mouth of Tinker Creek on the Roanoke River upstream to the Rt. 11 Bridge in Cloverdale. The temperature impaired segment is also described in a separate Part 1C fact sheet.

This segment was 1998 Overlisted by the US EPA for temperature (Attachment A).

Total phosphorus values at special study station 4ATKR016.64 (SS975101) exceed the nutrient threshold of 0.20 mg/l in four of seven samples. Maxima values range from 0.22 to 0.42 mg/l. Thus 3.12 miles in the upper portion of Tinker Creek are 'Threatened' for the aquatic life use. The total phosphorus segment extends from the mainstem headwaters downstream to the Roanoke City diversion tunnel on Tinker Creek.

1995 NOAA sediment effect range-median (ER-M) screening values (SVs) measured in parts per million for metals and parts per billion (ppb) for organics are found in excess from 1996 (chlorodane) and 1999 sediment collections at 4ATKR000.69. An 11.90 mile segment is 'Threatened' for the aquatic life use as a result. Exceeding parameters, values and SVs are:

lead (Pb) - 244 - SV= 218 ppm
polychlorinated biphenyls (PCBs) - 941 - SV= 180 ppb
Total DDT - 86.3 - SV= 46.1 ppb
chlorodane - 84.6 (1996) and 18.1 (1999) - SV= 6 ppb
phenanthrene - 5071.73 - SV= 1500 ppb
antracene - 1593 - SV= 1100 ppb
benz(a) anthracene - 2464 - SV= 1600 ppb
dibenz(ah) anthracene - 327 - SV= 260 ppb
pyrene - 6061.68 (max.)- SV= 2600 ppb
benzo(a) pyrene - 1763 - SV= 1600 ppb

Swimming Use
The source of the fecal coliform bacteria impairment is believed to be urban nonpoint source pollution from the mouth of Tinker Creek upstream to approximately river mile 12.58 in Botetourt County (Daleville Quad) near the Roanoke Gas Company. Agricultural nonpoint source pollution is the believed source of impairment from approximately river mile 12.58 to the headwaters of Tinker Creek in Botetourt County.

Aquatic Life Use
The source of the temperature exceedances are believed to be from solar radiation. Exceedances were recorded in a largely urban drainage.

The source of the sediment metal and organics exceedances are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Roanoke, Botetourt

STREAM NAME: Glade Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L05R_GLA04A00 **TMDL MAP ID:** VAW-L05R-03

SEGMENT SIZE: 12.61 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2004

UPSTREAM LIMIT:

DESCRIPTION: Glade Cr. headwaters in Botetourt County.

RIVER MILE: 12.61

LATITUDE: 37.39750 **LONGTITUDE:** -79.81741

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Glade Cr. on Tinker Cr.

RIVER MILE: 0.00

LATITUDE: 37.27694 **LONGTITUDE:** -79.90896

The segment begins in the Glade Creek headwaters on the Stewartsville Quad and extends downstream to its confluence with Tinker Creek at river mile 0.83. The segment ends on the Roanoke Quad.

Note: The 1998 segment has been expanded to include the Glade Creek headwaters.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
General Standard (Benthic) - 0.96	NPS - Urban
	Natural
	Unknown

SUMMARY:

Swimming Use
Nonsupport of the swimming use is found from 1997 special study data (SS 975101). Special Study stations are:

4AGLA000.20 - Walnut Avenue Bridge - Vinton
4AGLA001.60 - Berkeley Rd (Rt. 653)
4AGLA004.39 - Layman Rd (Rt. 606)
4AGLA005.75 - Webster Rd (Rt. 738)
4AGLA008.10 - Rt. 723

Stations 4AGLA000.20 (four of seven samples), 4AGLA001.60 (two of seven), 4AGLA004.39 (four of seven) and 4AGLA005.75 (three of seven) all exceed the 1000 n/100 ml fecal coliform bacteria instantaneous criterion. Only one exceedance from six samples occur at station 4AGLA008.10.

Stations 4AGLA000.20, 4AGLA001.60, 4AGLA004.39 and 4AGLA005.75 each exceed the 200 n/100 ml geometric mean for fecal coliform bacteria in two of two calculations derived from the special study data. Station 4AGLA008.10 exceeds the geometric mean in one of two calculations.

Aquatic Life Use
Three of seven measurements exceed the WQS designated natural trout water (Class VI) 20 °C criterion at 4AGLA008.10 (SS 975101). Temperature exceedances occur in the months of June (20.7°C), July (21.7°C) and August (21.8°C). Based on these data the upper portion of the segment does not support the aquatic life use. The 6.86 mile segment lies in the upper portion of the Glade Creek mainstem. The segment extends from the mouth of Coyner Spring Branch upstream to the Glade Creek headwaters. A separate Part 1C (Natural) fact sheet describes the segment.

The aquatic life use is also 'Threatened' from citizen benthic collections at 4AGLA-SOS. Citizen findings reveal a moderate probability for adverse conditions in a 0.96 mile portion that extends from the Norfolk Southern Railway tracks (37°17'00.48" / 079°53'47.48") downstream to the Glade Creek confluence with Tinker Creek.

Swimming Use
The source of the fecal coliform bacteria impairment is believed to be primarily urban nonpoint source runoff.

Aquatic Life Use
The source of the temperature exceedances are believed to be naturally occuring from solar radiation.

Threatened benthic conditions are unknown until confirmation of the threatened status is conducted. However urban nonpoint source runoff is the likely source.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford, Franklin, Pittsylvania

STREAM NAME: Roanoke (SML) tributaries, Blackwater River and tributaries

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L07R_BDA01A00 **TMDL MAP ID:** VAW-NEW-1 Rivers

SEGMENT SIZE: 618.22 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Roanoke River SML tributaries, Blackwater River and tributaries.

RIVER MILE:

LATITUDE: **LONGTITUDE:**

DOWNSTREAM LIMIT:

DESCRIPTION: Smith Mountain Lake backwaters

RIVER MILE:

LATITUDE: **LONGTITUDE:**

Water Quality Standards designate 'nutrient enriched waters' as: NEW-1 (Smith Mountain Lake) to include the immediate drainage to the Lake and the Blackwater River drainage.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
WQS Designated nutrient enriched waters; NEW-1	Water Quality Standards

SUMMARY:

Water Quality Standards contained in the Virginia Administrative Code (VAC) (9 VAC 25-260-00 et seq.) establish a designation of "nutrient enriched waters" based on an evaluation of indicators of nutrient enrichment (9 VAC 25-260-330). 9 VAC 25-260-350 provides a listing of designated "nutrient enriched waters". These waters are described below by the code number and description. Watershed Identification numbers addressed by this fact sheet and total miles covered by the respective code are supplied as reference. 'Threatened' mileages are as follows:

9 VAC 25-260-350 A.1. - Smith Mountain Lake and all tributaries (tributaries does not refer to the mainstem of the waterbody named). Watershed:
VAW-L06R - Total Miles: 90.59. 'Threatened' Miles: 80.67.
VAW-L07R - Total Miles: 167.95. 'Threatened' Miles: 148.72.
VAW-L08R - Total Miles: 209.02. 'Threatened' Miles: 176.11.
VAW-L09R - Total Miles: 79.08. 'Threatened' Miles: 74.68.
VAW-L10R - Total Miles: 78.02. 'Threatened' Miles: 58.85.
VAW-L11R - Total Miles: 64.77. 'Threatened' Miles: 54.08.
VAW-L12R - Total Miles: 25.11. 'Threatened' Miles: 25.11.

Water Quality Standards (9 VAC 25-260-00 et seq.) designate 'nutrient enriched waters'. See Virginia Administrative Codes 9 VAC 25-260-330 Purpose and 9 VAC 25-260-350 Designation of nutrient enriched waters (A 1. - 21.).

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Blackwater River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L08R_BWR05A00 **TMDL MAP ID:** VAW-L08R-04

SEGMENT SIZE: 39.7 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2000 - 2004

UPSTREAM LIMIT:

DESCRIPTION: Confluence of N.F./S.F. Blackwater R.

RIVER MILE: 60.16

LATITUDE: 37.02472 **LONGTITUDE:** -80.02676

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of Smith Mountain Lake.

RIVER MILE: 20.46

LATITUDE: 37.06250 **LONGTITUDE:** -79.76962

The upstream limit of the segment is at the confluence of the North and South Forks of the Blackwater River (Callaway Quad). The segment's end is at the backwaters of Smith Mountain Lake. (Redwood Quad).

Note: Segment mileage changes are due to the use of the National Hydrogaphy Dataset (NHD) and combining three separate 1998 segments into one segment.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
General Standard (Benthic) - 15.74 mi.	NPS - Agriculture / Wildlife
	NPS - Agriculture - 1998
Total Phosphorus - 20.68 mi.	NPS - Agriculture

SUMMARY:

Swimming Use
Fecal coliform bacteria Total Maximum Daily Load (TMDL) Studies and allocation scenarios are complete for the Upper, Middle and Lower Blackwater River drainages. These studies incorporate tributary streams that lie within the boundaries of VAW-L08R and VAW-L10R. The waters are delisted for fecal coliform bacteria with the US Environmental Protection Agency (EPA) approval of the Upper Blackwater Study on 03/09/2001, the Middle on 12/04/2001 and the Lower on 04/27/2001. Ultimately the TMDL Study and allocation scenarios will be incorporated into the 303(e) Water Quality Management Plans. The entirety of the approved studies and allocations can be viewed at http://www.deq.state.va.us. Draft Implementation Plans for the North Fork, South Fork, Upper and Middle Blackwater River are complete and inclusive of tributary waters. Draft Phase I Implementation Plan development is the next step for the Lower Blackwater.

The Blackwater, originally 303(d) Listed in 1996 and again in 1998, is based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the swimming use by exceedances of both the geometric mean (200 n/100 ml) and instantaneous criterion (1000 n/100 ml).

Fecal coliform bacteria continue to exceed the instantaneous criterion at station 4ABWR061.20 (Rt. 641 Bridge) with 20 of 30 samples exceeding (not supporting). Station 4ABWR045.80 (Rt. 812 Bridge) continues to report 14 exceedances from 30 samples (not supporting) and station 4ABWR032.32 (Rt. 122 Bridge at the stream gaging station) reports criterion excursions in five of 14 samples (not supporting). Monitoring continues at station 4ABWR019.75 (Rt. 834 Bridge or Brooks Mill Bridge) where eight of 58 samples exceed (partial support). 4ABWR019.75 is located within watershed VAW-L10R.

Tributary ambient data from the North and South Forks of the Blackwater River, Little and Teels Creeks also report exceedances of the instantaneous fecal coliform bacteria criterion. Green Creek has only two additional fecal coliform bacteria

collections beyond that gathered within the special study (SS 925102). Neither data point exceeds the criterion. However Green Creek remains 303(d) impaired. Tributary segments are described in separate Part 1A fact sheets.

Aquatic Life Use
The original 1996 General Standard benthic impairment was based on Green Creek (Blue Ridge) as a reference site. The reference site for the Blackwater River mainstem stations is now in the Pigg River drainage (transitional Blue Ridge to Piedmont). The Pigg River reference site is believed to more closely reflect conditions in the Blackwater River mainstem.

The original 1996 and 1998 303(d) Listed benthic impaired water extends from the confluence of the North and South Forks of the Blackwater River downstream to the upstream ending of the WQS public water supply (PWS) designation for the Rocky Mount water treatment facility. Single 2000 Rapid Bioassessment Protocol II surveys (RBP II) at 4ABWR045.80 and 4ABWR049.73 report no impact to the benthic community in the 15.74 mile Blackwater River segment. However the segment remains impaired based on the 1998 303(d) listing.

A General Standard benthic TMDL Study is scheduled to begin in August 2002. Completion of the study will determine the degree of support or impairment and reference site selection for the Blackwater River. These waters remain 303(d) Listed for the General Standard (Benthic) until sufficient data support continued listing or delisting.

The aquatic life use is also 'Threatened' for 20.68 miles on the Blackwater River. Total phosphorus exceedances of the 0.20 mg/l threshold continue at 4ABWR054.81 (Rt. 734 Bridge, Franklin County). Three of 14 samples exceed at 0.82 (August 1999), 0.33 (April 2000) and 0.29 mg/l (August 2000). Exceedances also occur at 4ABWR045.80 (Rt. 812 Bridge). Five of 25 samples exceed the threshold where excursions range from 0.21 to 0.55 mg/l. The fully supporting, but threatened segment extends from the confluence of the North and South Forks of the Blackwater River downstream to the Town of Rocky Mount water intake on the Blackwater River.

Swimming Use
Direct deposition at baseflow is the critical condition in the Blackwater River. Bacteria source tracking utilized in the studies show wildlife as the dominant contributor of fecal coliform bacteria in the upper and middle portions of the drainage with agriculture second. The Lower Blackwater is more of a mix of land use activity and upstream contributions.

Aquatic Life Use
The 1998 source of the General Standard (Benthic) impairment is nonpoint source runoff from agricultural activity. The segment was 1998 listed and remains listed for General Standard (benthic) impairments. The Blackwater drainage lies both in the Blue Ridge and Piedmont ecoregions. Establishing reference sites that adequately represent the drainage have proven a difficult task.

The source of total phosphorus is believed to be contributions from agricultural activities.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Little Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L08R_LLE03A00 **TMDL MAP ID:** VAW-L08R-05

SEGMENT SIZE: 7.61 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: West of the Helm community off Rt. 693.

RIVER MILE: 7.61

LATITUDE: 37.07667 **LONGTITUDE:** -79.96890

DOWNSTREAM LIMIT:

DESCRIPTION: Little Cr. mouth on the Blackwater R.

RIVER MILE: 0.00

LATITUDE: 37.04750 **LONGTITUDE:** -79.90941

The segment begins just west of Helm off Rt. 693 and extends to the Little Creek mouth on the Blackwater River. The entire segment is on the Boones Mill Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Total Phosphorus	NPS - Agriculture

SUMMARY:

Swimming Use
The Middle Blackwater River fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenarios are complete. Little Creek is tributary to the Blackwater River and is included in the TMDL Study. The segment is therefore delisted for fecal coliform with the US Environmental Protection Agency (EPA) approval of the Middle Blackwater Study on 12/04/2001. Ultimately the TMDL Study and allocation scenarios will be incorporated into the 303(e) Water Quality Management Plans. The entirety of the approved TMDL Study and allocations can be viewed at http://www.deq.state.va.us. The Draft Phase I Implementation Plan is complete and incorporates Little Creek.

The Blackwater River segment, originally 303(d) Listed in 1996, is based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the swimming use by exceedances of both the geometric mean (200 n/100 ml) and instantaneous criteria (1000 n/100 ml).

Monitoring continues at 4ALLE005.22 (Rt. 697 Bridge) where 10 of 14 fecal coliform bacteria samples exceed the instantaneous criterion. The segment remains impaired for the swimming use.

Aquatic Life Use
A biological Rapid Bioassessment Protocol II (RBPII) survey reports moderate impacts to the benthic community. The aquatic life use is only partially supported due to contravention of the General Standard for aquatic life. The General Standard (benthic) impairment is not addressed in the EPA approved Middle Blackwater TMDL Study. The General Standard (Benthic) impairment is a 2002 303(d) Listing.

The aquatic life use is also fully supporting, but threatened based on excursions of the 0.20 mg/l total phosphorus threshold at 4ALLE005.22. Ambient data record five of 14 observations in excess of the threshold causing the 'Threatened' status. Exceedances occur in 1999 and 2000 with a maximum value of 0.36 mg/l in April 2000. Total phosphorus maxima range from 0.21 to 0.36 mg/l.

Swimming Use
Bacteria source tracking utilized in the TMDL study demonstrates that wildlife is the dominant contributor of fecal coliform

bacteria with agriculture second. Direct deposition at baseflow is the critical condition.

Aquatic Life Use
Agricultural nonpoint source runoff is the believed source of the General Standard (benthic) impairment and total phosphorus excursions.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Mollie Branch

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L09R_MHA02A00 **TMDL MAP ID:** VAW-L09R-02

SEGMENT SIZE: 2.52 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Mollie Branch headwaters.

RIVER MILE: 2.52

LATITUDE: 37.07306 **LONGTITUDE:** -79.88228

DOWNSTREAM LIMIT:

DESCRIPTION: Mollie Branch mouth on Maggodee Cr.

RIVER MILE: 0.00

LATITUDE: 37.09278 **LONGTITUDE:** -79.85430

The segment begins in the headwaters of Mollie Branch and extends to its mouth on Maggodee Creek. The segment is on the Boones Mill and Redwood Quads.

Note: This segment is incorporated in the Maggodee Creek 1998 listed segment.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus	NPS - Agriculture/Wildlife
	NPS - Agriculture

SUMMARY:

Swimming Use
The Maggodee Creek Fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenarios are complete. The study incorporates tributary streams that lie within the boundaries of watershed VAW-L09R. The waters are delisted for fecal coliform bacteria with the US Environmental Protection Agency (EPA) approval of the Maggodee Creek Study on 04/27/2001. The entirety of the approved study and allocations can be viewed at http://www.deq.state.va.us. Draft Phase I Implementation Plan development is the next step.

The Maggodee Creek segment, originally 303(d) Listed in 1996, is based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the swimming use by exceedances of both the geometric mean (200 n/100 ml) and instantaneous criteria (1000 n/100 ml).

Fecal coliform bacteria continue to exceed the instantaneous criterion at station 4AMHA000.01 (Off Rt. 687 at confluence/w Maggodee) with 10 of 12 samples exceeding (not supporting). Monitoring continues at station 4AMHA000.01.

Aquatic Life Use
An overlapping 0.76 mile segment is fully supporting, but threatened based on total phosphorus threshold excursions at station 4AMHA000.01 (Off Rt. 687 at confluence with Maggodee). Two of 12 samples exceed the 0.20 mg/l total phosphorus threshold. Maxima are 0.37 (April 2000) and 0.54 mg/l (June 2000). The segment extends from the Mollie Creek mouth on Maggodee Creek upstream 0.76 miles. A separate Part 3 fact sheet describes this segment.

Swimming Use
Bacteria source tracking utilized in the TMDL study show agriculture and wildlife as the major contributors of fecal coliform bacteria in the Maggodee Creek drainage.

Aquatic Life Use
The source of the total phosphorus is believed to be mainly from agricultural nonpoint source runoff.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Gills Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L11R_GIL03A00 **TMDL MAP ID:** VAW-L11R-01

SEGMENT SIZE: 22.25 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2000 - 2002

UPSTREAM LIMIT:

DESCRIPTION: Headwaters west of Rt. 684 Bridge.

RIVER MILE: 28.62

LATITUDE: 37.15528 **LONGTITUDE:** -79.92226

DOWNSTREAM LIMIT:

DESCRIPTION: Gills Cr. backwaters of Smith Mtn. Lake

RIVER MILE: 6.37

LATITUDE: 37.08500 **LONGTITUDE:** -79.71131

The segment upper limit is west of the Rt. 684 Bridge in Franklin County (Garden City Quad). The downstream limit is in the Gills Creek backwaters of Smith Mountain Lake. (Moneta S.W. Quad).

Note: Segment mileages have changed due to the use of the National Hydrography Dataset (NHD). Lower portions of the 1998 listed segment are incorporated in watershed L12L listings.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus	NPS - Agriculture/Urban
	NPS - Agriculture

SUMMARY:

Swimming Use
The Gills Creek fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenario development are underway. The anticipated completion date is 05/01/2002. The segment, originally 303(d) Listed in 1996, is based on a 319 funded special study (SS 925102) and ambient sample collections. Abundant fecal coliform bacteria counts failed to support the swimming use by exceedances of both the geometric mean (200 n/100 ml) and instantaneous criterion (1000 n/100 ml).

The stream continues to fail to meet the swimming use due to exceedances of the instantaneous 1000 n/100 ml criterion. Six of 22 samples exceed at station 4AGIL023.22 (Rt. 657 Bridge). Station 4AGIL008.30 (Rt. 834 Bridge near Booker T. Washington National Park) records four of 13 excursions of the criterion. The swimming use remains impaired.

Aquatic Life Use
The lower portion of Gills Creek is fully supporting, but threatened for the aquatic life use due to exceedances of the total phosphorus 0.20 mg/l threshold. Station 4AGIL008.30 reports two of 13 total phosphorus observations in excess of the threshold. Maxima are 0.59 (April 2000) and 1.43 mg/l (June 2000). The 'Threatened' segment extends from upstream of the Rt. 122 Bridge near the Booker T. Washington National Monument downstream to the Gills Creek backwaters of Smith Mountain Lake.

Swimming Use
The stream is believed to be predominately impacted by agricultural activity with some urbanizing areas contributing to nonpoint source runoff. Based on TMDL studies conducted in adjacent Blackwater River watersheds wildlife could be a primary contributor of fecal coliform bacteria contamination.

Aquatic Life Use

The source of the total phosphorus is believed to be primarily from agricultural nonpoint source runoff.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford, Franklin

STREAM NAME: Smith Mountain Lake - Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L12L_ROA03A02 **TMDL MAP ID:** VAW-L12L-03

SEGMENT SIZE: 2871 - Acres

INITIAL LISTING: 2002 **TMDL Schedule:** 2004 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Falling Cr. mouth on the Roanoke R.

RIVER MILE: 188.91

LATITUDE: 37.23250 **LONGTITUDE:** -79.84752

DOWNSTREAM LIMIT:

DESCRIPTION: Upstream of Beckys Cr. mouth on Roanoke R.

RIVER MILE: 173.34

LATITUDE: 37.13000 **LONGTITUDE:** -79.65476

The segment begins at the Falling Creek mouth and extends downstream 15.57 miles to upstream of the Beckys Creek confluence on the Roanoke River. The segment spans the Hardy and Goodview Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus / Metals in sediment	Unknown
	Natural/Stratification
	NPS Urban/Agriculture Mix / Unknown

SUMMARY:

The segment brackets mainstem lake stations 4AROA183.64 at the mouth of Beaverdam Creek, 4AROA180.21 at the confluence with Indian Creek and 4AROA175.63 at Hales Ford Bridge. There are a total of 11 citizen sites monitored for total phosphorus and chlorophyll a. Four citizen sites were monitored for fecal coliform bacteria. No citizen collections were made at depth.

Fish Consumption Use
1998 fish collections at 4AROA175.63-TL find polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) in tissue from four Striped Bass. Fish tissue results are 58.0, 84.7, 107.0 and 198.0 ppb. These waters only partially support the fish consumption use. There is no Virginia Department of Health (VDH) Advisory as tissue concentrations are below the VDH action level of 600 ppb. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us/water/

Aquatic Life Use
Top layer: Three stations report exceedances of the pH range criterion 6.0-9.0 Standard Units (SU) in the surface waters of Smith Mountain Lake resulting in the impairment of the aquatic life use. All exceedances were above the 9.0 SU alkaline range. Exceedances of the criterion occur at 4AROA183.64-TL, 4AROA180.21-TL and 4AROA175.63-TL. Six of 23 pH measurements exceed the criterion at 4AROA183.64-TL and seven of 23 at 4AROA180.21-TL. Station 4AROA175.63-TL records six of 23 measurements exceeding the criterion.

Station 4AROA183.64.05-TL exceeding values range from 9.10 to 9.20 SU. 4AROA180.21-TL maxima range from 9.07 to 9.80 SU. Exceedances range from 9.03 to 9.40 SU at 4AROA192.55-TL. There are no pH citizen data.

The aquatic life use is fully supporting but, threatened for total phosphorus due to excursions of the 0.05 mg/l threshold from top and bottom (see below) layer samples. Five Roanoke River mainstem citizen sites record excursions of the threshold. 4AROA-R19-FC records the most occurrences in 15 of 21 samples. Values range from a low of 0.04 to a maximum of 0.15

mg/l. The mean concentration is 0.06 mg/l. The exceedance rate at each of the remaining stations is greater than 10 percent. Overall from a total of 245 total phosphorus samples 80 exceed the threshold.

Chlorophyll a results show full support of the aquatic life use. Only two of 11 citizen chlorophyll a stations produce exceedance rates greater than 10 percent (lake threshold = 0.05 mg/l). Station 4AROA-R23-FC reports 3 of 23 excursions and 3 of 23 at 4AROA-CR22-FC. Both sites are off the main body. Only eight observations exceed the chlorophyll a threshold from a total of 252 samples. Citizen sites are on and off the main body of the lake.

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. 4AROA183.64-BL reports 25 excursions from 44 measurements, 4AROA180.21 27 of 43 and 4AROA175.63 exceeds the minimum in 24 of 45. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs.

Total phosphorus exceedances of the 0.05 mg/l lake threshold are found at 4AROA183.64-BL and 4AROA180.21-BL causing the waters to be fully supporting, but threatened for the aquatic life use. Nine of 45 samples exceed the threshold at 4AROA183.64-BL and six of 43 at 4AROA180.21-BL. Station 4AROA183.64.05-BL exceeding values range from 0.06 to 0.14 mg/l. 4AROA180.21-BL maxima range from 0.06 to 0.16 mg/l.

Sediment metals are found at 4AROA183.64-BL from one of four samples. The 1995 NOAA effect-range median (ER-M) screening values (SV) in parts per million (ppm) exceed for silver (Ag, SV=3.7, 1 of 4 samples 22.3), beryllium (Be, SV=5, 1 of 4 samples 16.2), nickel (Ni, SV=51.6, 1 of 4 samples 183.21) and lead (Pb, SV=218, 1 of 4 samples 466).

A separate Part 1C fact sheet describes the natural pH and dissolved oxygen impairments. And a Part 3 fact sheet describes the aquatic life use 'Threatened' status of the waters.

Fish Consumption Use
The exact source(s) of the PCB contamination is unknown.

The Virginia Department of Health (VDH) PCB action level is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment. Other information on VDH fish consumption advisories, prohibitions or bans can be viewed at http://www.vdh.state.va.us

Aquatic Life Use
The source of the pH alkaline exceedances is due to natural conditions created in reservoirs.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

Total phosphorus sources are believed to be a mix of nonpoint source contributions from upstream urban (VAW-L04R) and marginal agricultural activity in the immediate drainage (VAW-L07R) to Smith Mountain Lake. Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.). The Upper Roanoke River Subarea Water Quality Management Plan (WQMP) also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-440-80 Segment classification; standards and 9-VAC 25-440-130 4. Nutrient Policy.).

The exact source of the sediment metals contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford, Franklin

STREAM NAME: Smith Mountain Lake - Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L12L_ROA04A02 **TMDL MAP ID:** VAW-L12L-04

SEGMENT SIZE: 378 - Acres

INITIAL LISTING: 1998 **TMDL Schedule:** 2004 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Back Creek mouth on Roanoke River (795 ft. pool elevation)

RIVER MILE: 195.00

LATITUDE: 37.22528 **LONGTITUDE:** -79.84752

DOWNSTREAM LIMIT:

DESCRIPTION: Falling Cr. mouth on Roanoke R. SML

RIVER MILE: 188.91

LATITUDE: 37.23250 **LONGTITUDE:** -79.78214

The segment begins at the mouth of Back Creek on the Roanoke River at the dead end of Rt. 618 and extends downstream to the mouth of Falling Creek on the Roanoke River, 6.09 miles in length. The entire segment is on the Hardy Quad.

Note: 1998 listed segment VAW-L07R is now incorporated in this segment. The backwaters of Smith Mountain Lake extend to the mouth of Back Creek. Segment mileage is 2002 reported as acres. Slight changes are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - PCBs	NPS - Urban
	Unknown
Dissolved oxygen (bottom)	Natural/Stratification

SUMMARY:

The segment brackets lake stations 4AROA196.05 McVeigh Ford, 4AROA192.94 just upstream of the Rt. 634 (Hardy Road) Bridge and 4AROA192.55 at the Rt. 634 (Hardy Road) Bridge (surface sample collections from Bridge). Six citizen monitored stations are within the segment. No citizen collections were made at depth.

Swimming Use
Top layer: Fecal coliform bacteria continue to cause the segment to only partially support the CWA swimming use. Station 4AROA196.05-TL records five of 23 samples in excess of the 1000 n/100 ml criterion. Stations 4AROA192.94-TL finds three of 23 samples and 4AROA192.55-TL records 11 out of 56 samples exceeding the instantaneous criterion. Two citizen stations report no exceedances in excess of the instantaneous criterion from sample sizes of nine. The segment remains 303(d) Listed.

Fish Consumption Use
1999 fish collections at 4AROA196.05-TL reveal polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) in tissue from four species: Largemouth Bass - 73.7, Carp - 124, Gizzard Shad- 386, and Redhorse Sucker - 89.9 ppb. These waters only partially support the fish consumption use. There is no Virginia Department of Health (VDH) Advisory as tissue concentrations are below the VDH action level of 600 ppb. Information on the fish tissue sampling program can be viewed at http://www.deq.state.va.us/water/

Aquatic Life Use

Top layer: Total phosphorus exceedances of the 0.05 mg/l threshold for reservoirs are found at 4AROA196.05-TL, 4AROA192.94-TL and 4AROA192.55-TL causing the waters to be fully supporting, but threatened. Ten of 23 total phosphorus samples exceed the threshold at 4AROA196.05-TL and 11 of 23 at 4AROA192.94-TL. Station 4AROA192.55 records 31 of 60 samples exceeding the threshold.

Station 4AROA196.05-TL exceeding values range from 0.06 to 0.22 mg/l. 4AROA192.94-TL maxima range from 0.06 to 0.11 mg/l. Exceedances range from 0.06 to 0.20 mg/l at 4AROA192.55-TL. Citizen data from four stations report exceedances in excess of the threshold as well in sample sizes ranging from five to 12.

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. Depth profiles at the existing stations were not conducted. However exceedances of the minimum criterion are believed to occur and are therefore listed as a natural impairment (see Part 1C). The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen 303(d) Listing is new to this segment.

The waters are fully supporting, but threatened based on the exceedance of the 1995 NOAA sediment effect-range median (ER-M) screening values (SV) for chlorodane. Station 4AROA196.05-BL records a 1999 sediment chlorodane value of 8.86 parts per billion (ppb) from four sediment collections. The NOAA 1995 ER-M SV for chlordane is 6 ppb.

A separate Part 1C describes an aquatic life use impairment and a Part 3 fact sheet describes the aquatic life use "Threatened' status for total phosphorus and sediment organics.

Swimming Use
The source is believed to be primarily from upstream urban nonpoint source contributions (VAW-L04R) and marginal agricultural activity in proximity of the upper reaches of Smith Mountain Lake.

Fish Consumption Use
The exact source(s) of the PCB contamination is unknown.

The Virginia Department of Health (VDH) PCB action level is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment. Other information on VDH fish consumption advisories, prohibitions or bans can be viewed at http://www.vdh.state.va.us

Aquatic Life Use
The total phosphorus source is believed to be primarily from upstream urban nonpoint source contributions (VAW-L04R) and marginal agricultural activity in proximity of the upper reaches of Smith Mountain Lake. Smith Mountain Lake is designated by Virginia's Water Quality Standards as a Nutrient Enriched Water (9 VAC 25-260-350 A.1.). The Upper Roanoke River Subarea Water Quality Management Plan (WQMP) also lists Smith Mountain Lake as water quality limited for phosphorus (9 VAC 25-440-80 Segment classification; standards and 9-VAC 25-440-130 4. Nutrient Policy.).

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

The source of the sediment chlorodane contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford, Franklin, Pittsylvania

STREAM NAME: Smith Mountain Lake

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L12L_ROA04A02 **TMDL MAP ID:** VAW-NEW-1 Lakes

SEGMENT SIZE: 6108 - Acres

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Smith Mountain Lake backwaters

RIVER MILE:

LATITUDE: **LONGTITUDE:**

DOWNSTREAM LIMIT:

DESCRIPTION: Smith Mountain Lake

RIVER MILE:

LATITUDE: **LONGTITUDE:**

Water Quality Standards designate 'nutrient enriched waters' as: NEW-1 (Smith Mountain Lake).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
WQS Designated nutrient enriched waters; NEW-1	Water Quality Standards

SUMMARY:

Water Quality Standards contained in the Virginia Admiistrative Code (VAC) (9 VAC 25-260-00 et seq.) establish a designation of "nutrient enriched waters" based on an evaluation of indicators of nutrient enrichment (9 VAC 25-260-330). 9 VAC 25-260-350 provides a listing of designated "nutrient enriched waters". These waters are described below by the code number and description. Watershed Identification numbers addressed by this fact sheet and total acres covered by the respective code are supplied as reference. 'Threatened' acreages follow:

9 VAC 25-260-350 A.1. - Smith Mountain Lake and all tributaries (tributaries does not refer to the mainstem of the waterbody named).
Watershed:
VAW-L12L - Total WQS Designated Acres: 20207.00. Monitored 'Threatened' Acres: 6086.00
WQS Designated Acres: 22.00 with no total phosphorus or chlorophyll a data.
Total equals 6108 acres 'Threatened'.

Water Quality Standards (9 VAC 25-260-00 et seq.) designate 'nutrient enriched waters'. See Virginia Administrative Codes 9 VAC 25-260-330 Purpose and 9 VAC 25-260-350 Designation of nutrient enriched waters (A 1. - 21.).

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania

STREAM NAME: Leesville Lake - Pigg River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L13L_PGG01A02 **TMDL MAP ID:** VAW-L13L-02

SEGMENT SIZE: 154 - Acres

INITIAL LISTING: 1998 **TMDL Schedule:** 2000 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Backwaters of Leesville Lake on the Pigg R.

RIVER MILE: 3.06

LATITUDE: 36.98861 **LONGTITUDE:** -79.51589

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence of Pigg and Roanoke R.

RIVER MILE: 0.00

LATITUDE: 37.00528 **LONGTITUDE:** -79.48122

The segment extends from the backwaters of Leesville Lake on the Pigg River downstream to the Pigg River confluence with the Roanoke River. The segment spans the Sandy Level, Pittsville and Leesville Lake Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:

Fish Tissue - PCBs

IMPAIRMENT SOURCE

NPS - Agriculture

Unknown

SUMMARY:

Swimming Use
Fecal coliform bacteria cause the segment to not support the swimming use. The segment incorporates station 4APGG003.29 (Rt. 605 Bridge). Six of 23 samples exceed the 1000 n/100 ml instantaneous criterion.

Fish Consumption Use
A Tier 2 fish tissue study (1993 Roanoke River Basin Study DEQ, Water Research & Standards, Richmond, Virginia) found polychlorinated biphenyls (PCBs) in one of five species at 4APGG003.29 in excess of the EPA human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb); Walleye (65.6 max.), a total of 50 fish were collected. The waters are fully supporting, but threatened for the fish consumption use based the exceedance of the SV for PCBs.

1999 fish tissue collections found no exceedances from a total of 22 fish. Species include Largemouth Bass, Carp, Yellow Perch and Redhorse Sucker. No Walleye were collected.

Swimming Use
The believed source of fecal coliform bacteria is primarily agricultural nonpoint source runoff. Wildlife contributions are possible in the mostly rural watershed.

Fish Consumption Use
The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. The Virginia Department of Health (VDH) review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti, Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as

coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford, Campbell, Pittsylvania

STREAM NAME: Leesville Lake - Roanoke River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L13L_ROA01A02 **TMDL MAP ID:** VAW-L13L-01N

SEGMENT SIZE: 2055 - Acres

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Confluence of Pigg & Roanoke R.

RIVER MILE: 156.65

LATITUDE: 37.00556 **LONGTITUDE:** -79.48118

DOWNSTREAM LIMIT:

DESCRIPTION: Leesville Dam

RIVER MILE: 143.85

LATITUDE: 37.09278 **LONGTITUDE:** -79.40261

The upstream limit of the segment is at the confluence of the Pigg and Roanoke Rivers downstream 12.80 miles to Leesville Dam. The segment spans the Smith Mountain Dam and Leesville Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened, Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus - 1648 acres	Natural/Stratification
	NPS - Agriculture

SUMMARY:

Top layer: The waters exceed the pH criterion of 6.0 - 9.0 Standard Units (SU) from the Old Womans Creek mouth downstream to Leesville Dam, a distance of 2.20 miles or 407 acres. Station 4AROA140.66-TL (Leesville Dam) records three of 18 pH measurements exceeding the alkaline criterion. Two of the exceeding value are 9.1 SU found in June and August of 1999. The remaining excursion 9.3 SU occurs in August 2000. The aquatic life use is only partially supported for 2.20 miles or 470 acres of the lower portion of Leesville Lake as a result.

Four of 12 citizen total phosphorus samples exceed the 0.05 mg/l threshold for lakes. The results at 4APGG-T11-FC cause 10.6 miles or 1648 acres of the lake to be 'Threatened' for the aquatic life use. The total phosphorus portion of the overall segment extends from the confluence of the Pigg and Roanoke Rivers downstream to the mouth of Old Womans Creek (37°03'43.36" / 079°24'17.03"). 4APGG-T11-FC records 0.052 in July 2000, 0.066 and 0.07 in June 2000 and 0.11 mg/l in August 2000.

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. Station 4AROA145.34-BL (Ramp near Bed/Cam Co. line) records nine of 26 measurements below the minimum criterion and 4AROA140.66-BL records 19 of 34. The waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs. The 2002 dissolved oxygen 303(d) Listing is new to this segment.

The source of the pH alkaline exceedance is due to natural conditions created in reservoirs.

Total phosphorus sources are believed to be a mix of nonpoint source contributions from upstream Pigg River watersheds primarily from agricultural activity.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Storey Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L14R_SDA02A00 **TMDL MAP ID:** VAW-L14R-02

SEGMENT SIZE: 11.6 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Intersection of Rt. 40 & Rt. 748

RIVER MILE: 11.60

LATITUDE: 36.93000 **LONGTITUDE:** -80.03851

DOWNSTREAM LIMIT:

DESCRIPTION: Storey Cr. mouth on the Pigg River

RIVER MILE: 0.00

LATITUDE: 36.96361 **LONGTITUDE:** -79.90908

The upper limit is west of Ferrum near the intersection of Rt. 40 and Rt. 748, perennial headwaters (Ferrum Quad). The downstream limit is the mouth of Storey Creek on the Pigg River (Rocky Mount Quad).

Note: Slight changes in segment mileage are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus - 9.61 miles	NPS - Urban/Agriculture
	PS

SUMMARY:

Swimming Use
The segment does not support the swimming use. Nonsupport is due to fecal coliform bacteria exceedances of the 1000 n/100 ml criterion at two stations 4ASDA009.79 (Rt. 623 above Ferrum STP) and 4ASDA009.77 (off Rt. 864 below Ferrum STP). 4ASDA009.79 finds six exceedances from 23 samples and 4ASDA000.977 records 16 out of 56.

Aquatic Life Use
Station 4ASDA009.77 records 22 exceedances of the 0.20 mg/l total phosphorus threshold from 57 samples. Maxima range in values from 0.30 to 4.30 mg/l (November 1998). 4ASDA009.77 is located downstream of the Ferrum Water & Sewerage Authority's outfall on Storey Cr. Upstream station 4ASDA009.79 found no exceedances from 17 samples. The aquatic life use 9.61 mile "Threatened' segment extends from the Ferrum Water & Sewerage Authority outfall (36°55'36.24 / 080°00'35.56) downstream to the Storey Creek mouth on the Pigg River.

Swimming Use
The source is believed to be a mix of agricultural and urban nonpoint source runoff around the Ferrum area. Infiltration/Inflow problems have been noted in the Ferrum area. A Consent Order requires the Ferrum Water & Sewerage Authority to correct these problems.

Aquatic Life Use
The source of the total phosphorus is believed from the Ferrum Water & Sewerage Authority's STP on Storey Creek.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin

STREAM NAME: Pigg River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L16R_PGG02A00 **TMDL MAP ID:** VAW-L16R-01

SEGMENT SIZE: 15.54 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Big Chestnut Cr. mouth on the Pigg R.

RIVER MILE: 32.99

LATITUDE: 36.93083 **LONGTITUDE:** -79.73730

DOWNSTREAM LIMIT:

DESCRIPTION: Snow Cr. mouth on the Pigg R.

RIVER MILE: 17.45

LATITUDE: 36.92917 **LONGTITUDE:** -79.60123

The segment starts at the mouth of Big Chestnut Creek and extends downstream to the mouth of Snow Creek. The segment spans the Penhook and Sandy Level Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus	NPS - Agriculture
	NPS - Agriculture

SUMMARY:

Swimming Use
Fecal coliform bacteria are abundant enough that this segment only partially supports the swimming use. Station 4APGG030.62 (Rt. 646, Fralin Bridge) found four of 23 samples exceeding the 1000 n/100 ml instantaneous criterion.

Aquatic Life Use
Station 4APGG030.62 (Rt. 646, Fralin Bridge) records two of 17 samples in exceedance of the 0.20 mg/l total phosphorus threshold. Both exceedances occur in January 1998 and 1999 at 0.30 mg/l.

The source of both the fecal coliform bacteria and total phosphorus are believed to be agricultural nonpoint source pollution.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania

STREAM NAME: Pigg River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L18R_PGG02A00 **TMDL MAP ID:** VAW-L18R-01

SEGMENT SIZE: 13.38 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2000 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Snow Cr. mouth on the Pigg R.

RIVER MILE: 17.45

LATITUDE: 36.92917 **LONGTITUDE:** -79.60118

DOWNSTREAM LIMIT:

DESCRIPTION: Backwaters of Leesville Lake

RIVER MILE: 4.07

LATITUDE: 36.98861 **LONGTITUDE:** -79.51589

The segment extends from the mouth of Snow Creek on the Pigg River downstream to the backwaters of Leesville Lake. The entire segment is on the Sandy Level Quad.

Note: A lower portion of the 1998 listed segment is incorporated by watershed L13L (Leesville Lake). Other slight mileage adjustments are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Fish Tissue - PCBs	NPS - Agriculture
	Unknown

SUMMARY:

Swimming Use
Fecal coliform bacteria cause the segment to not support the swimming use. The segment incorporates station 4APGG003.29 (Rt. 605 Bridge). Six of 23 samples exceed the 1000 n/100 ml instantaneous criterion.

Fish Consumption Use
A Tier 2 fish tissue study (1993 Roanoke River Basin Study DEQ, Water Research & Standards, Richmond, Virginia) found polychlorinated biphenyls (PCBs) in one of five species at 4APGG003.29 in excess of the EPA human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb); Walleye (65.6 max.), a total of 50 fish were collected. The waters are fully supporting, but threatened for the fish consumption use based the exceedance of the EPA SV for PCBs.

1999 fish tissue collections found no exceedances from a total of 22 fish. Species include Largemouth Bass, Carp, Yellow Perch and Redhorse Sucker. No Walleye were collected.

Swimming Use
The believed source of fecal coliform bacteria is primarily agricultural nonpoint source runoff. Wildlife contributions are possible in the mostly rural watershed.

Fish Consumption Use
The exact sources of the PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. The Virginia Department of Health review of the 1993 study by the Toxic Substances Program reports ". . . that none of the contaminants, at reported concentrations, poses an imminent threat to human health from consuming fish." (January 17, 1997, letter from Khizar Wasti,

Director, Division of Health Hazards Control, VDH to Alan Anthony, Director, Water Research & Standards, DEQ).

PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell

STREAM NAME: Staunton (Roanoke) River, UT

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L19R_XLN01A02 **TMDL MAP ID:** VAC-L19R-06

SEGMENT SIZE: 0.25 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Culvert near BFG Industries.

RIVER MILE: 0.25

LATITUDE: 37.11250 **LONGTITUDE:** -79.27778

DOWNSTREAM LIMIT:

DESCRIPTION: Unnamed tributary confluence on Staunton (Roanoke) R.

RIVER MILE: 0.00

LATITUDE: 37.11083 **LONGTITUDE:** -79.27333

The segment begins at the mouth of a culvert located off Main street near BFG Industries and extends downstream to its confluence with the Staunton (Roanoke) River. The entire segment is on the Altavista Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Sediments - PCBs, Chlordane	Legacy contaminated soils

SUMMARY:

The aquatic life use is 'Threatened' based on sediment data from five samples collected at various depths in a 30 square foot area downstream of a culvert located near BFG Industries. Each sediment collection at station 4AXLN000.25 records exceedances of the 1995 NOAA effect range- median (ER-M) screening value (SV= 180 ppb) for polychlorinated biphenols (PCBs). The results of each in parts per billion (ppb) are as follows:

Edge of concrete pad- 34,450
24 feet downstream of culvert mouth- 3,072,750
10 inch depth at 24 feet downstream of culvert mouth- 860,160
3 feet to the left of 24 feet downstream of culvert mouth (surface)- 114,490
3 feet to the left of 24 feet downstream of culvert mouth 3-6 inch depth- 23,270

Station 4AXLN000.05 (near its confluence with the Staunton (Roanoke) River) also records exceedances of the PCB SV and the 1995 NOAA chlordane SV of 6 ppb. Recorded values are 82,235 PCB & chlordane 38.8 ppb.

The believed source of PCBs is a former leaking underground storage tank and legacy soil contamination at BFG Industries, Inc. The tank was drained in 1973 and removed in 1986.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell, Pittsylvania

STREAM NAME: Staunton (Roanoke) River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L30R_ROA08A00 **TMDL MAP ID:** VAC-L19R-01

SEGMENT SIZE: 29.17 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Leesville Dam

RIVER MILE: 140.02

LATITUDE: 37.09389 **LONGTITUDE:** -79.39972

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Seneca Creek

RIVER MILE: 110.85

LATITUDE: 37.08972 **LONGTITUDE:** -79.12333

Staunton (Roanoke) River mainstem from Leesville Dam downstream to the mouth of Senaca Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Organics in fish tissue - Threatened (H. epoxide - 3.44 miles)	VDH Fish Consumption Advisory, Unknown
	Unknown
	Unknown

SUMMARY:

The Virginia Department of Health (VDH) has issued a 'Health Advisory' for fishing in this segment of the Staunton (Roanoke) River based on fish tissue analysis. The segment only 'Partially Supports' the fish consumption use for Smallmouth Bass, Channel Catfish, Flathead Catfish, Striped Bass, White Bass, and Carp. Fish tissue analysis reveals PCB levels high enough for issuance of an advisory. The VDH advises limiting the amount of fish consumed to two 8 oz. portions per month. Young children and pregnant women are advised not to eat any of these fish. The total VDH 'Health Advisory' extends from Leesville Dam on downstream below Clover, Virginia; 5.4 miles downstream of the Route 360 Bridge. A total length of approximately 84 miles.

Exceedance of the US EPA human health-risk based screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) is found in four species downstream of Leesville Dam in 1997. Values reported, in parts per billion (ppb), are from one Carp (57.5) , one Channel Catfish (111), one Flathead Catfish (311) and one Redhorse Sucker (164 ppb).

1998 fish tissue collections at station 4AROA125.59, Mansion Bridge in Campbell County, Rt. 640, also record SV exceedances from six species. SV exceedances in ppb were one Carp (309), four Channel Catfish (208 max.), one Flathead Catfish (72.6), one Redhorse Sucker (286), one Walleye (349) and two Smallmouth Bass (99 max.).

An additional 2002 Partial Support of the fish consumption use is also found within this segment, 15.20 miles from the mouth of the Big Otter River downstream to Seneca Creek. The total length extends from the mouth of the Big Otter River downstream to the mouth of Falling River; a distance of 30.29 miles. Exceedances of Heptachlor epoxide (SV 10 ppb) from 1998 fish tissue collections at station 4AROA125.59 (downstream of the Big Otter River) reveal 3 species above the SV. They are one Walleye 12.04, one Channel Cat - 25.03 and one Redhorse Sucker - 10.06 ppb. Station 4AROA108.09 in Long Island reports exceedances in 5 species; a Smallmouth Bass (23.99), two Channel Catfish (26.28 max.), three Flathead Catfish (95.93 max.), a Redhorse Sucker (15.22) and a Carp (25.01 ppb). And a single species at station 4AROA097.07 in Brookneal finds a Redhorse Sucker with 15.22 ppb.

1999 fish tissue collections at station 4AROA117.09 (near Taber) find 2 species in excess of the Heptachlor epoxide SV; a Redhorse Sucker 11.01 and a Channel Catfish 17.96 ppb. The VDH Advisory applies only to PCBs.

A 2002 Heptachlor epoxide 'Threatened' fish consumption use segment extends from Leesville Dam downstream to the confluence of Goose Creek (3.34 miles). Heptachlor epoxide is measured in a single species, Flathead Catfish, at 10.81 ppb.

Results of fish tissue and sediment sampling from the special PCB ongoing study in the Staunton (Roanoke) River are posted at the DEQ website, http://www.deq.state.va.us.

The exact source(s) of PCB contamination is unknown. One stormwater and one legacy industrial source has been identified in the segment. Investigations to discover potential sources continue as do fish tissue and sediment sampling studies.

The exact source of the Heptachlor epoxide is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell

STREAM NAME: Lynch Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L19R_LYH01A02 **TMDL MAP ID:** VAC-L19R-05

SEGMENT SIZE: 0.68 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Just upstream of Main Street

RIVER MILE: 0.68

LATITUDE: 37.11444 **LONGTITUDE:** -79.29000

DOWNSTREAM LIMIT:

DESCRIPTION: Lynch Cr. confluence on Staunton (Roanoke) R.

RIVER MILE: 0.00

LATITUDE: 37.10528 **LONGTITUDE:** -79.28611

The Lynch Creek segment extends from just upstream of Main Street (Bus. 29) in Altavista downstream to its confluence with the Staunton (Roanoke) River. The entire segment is on the Altavista Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Sediments - PCBs, Chlordane	Unknown

SUMMARY:

The aquatic life use is 'Threatened' based on sediment data from five sites. 4ALYH000.02 (Near Town Of Altavista Park), 4ALYH000.22 (Between RR & spur track), 4ALYH000.26 (Between Main St.(Bus 29) & RR closer to RR), 4ALYH000.33 (Between Main St.(Bus 29) & RR closer to Main St.) and 4ALYH000.37 (Upstream of Main St. (Bus. 29) in Altavista) each record exceedances of the 1995 NOAA effect range- median (ER-M) screening value (SV= 180 ppb) for polychlorinated biphenols (PCBs).

The exact source(s) of PCBs and chlordane are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford

STREAM NAME: Stoney Creek - Stoney Creek Reservoir

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L23L_SCB01A02 **TMDL MAP ID:**

SEGMENT SIZE: 28 - Acres

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Stoney Creek Reservoir

RIVER MILE: 4.55

LATITUDE: 37.44778 **LONGTITUDE:** -79.54629

DOWNSTREAM LIMIT:

DESCRIPTION: Stoney Creek Reservoir Dam

RIVER MILE: 4.23

LATITUDE: 37.44389 **LONGTITUDE:** -79.54894

Stoney Creek Reservoir in Bedford County.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Copper, DDD, DDE	Unknown

SUMMARY:

An exceedance of the 1995 NOAA effect range- median (ER-M) sediment screening value (SV) is found for copper (Cu, SV=270 ppm, 1 of 1 samples, max. 401), DDD (SV=20 ppb, 1 of 1 sample, max. 70) and DDE (SV=27 ppb, 1 of 1 sample, max. 50) in August 1996. Station 4ASCB004.58 at the dam records the exceedances. The segment is fully supporting, but threatened for the aquatic life use.

The source of the metal and organic exceedances are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford

STREAM NAME: Sheeps Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L23R_SEE02A00 **TMDL MAP ID:** VAW-L23R-01

SEGMENT SIZE: 7.92 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2000 - 2001

UPSTREAM LIMIT:

DESCRIPTION: Off Rt. 614 near Reba

RIVER MILE: 7.92

LATITUDE: 37.42833 **LONGTITUDE:** -79.64769

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence with Stoney Cr.

RIVER MILE: 0.00

LATITUDE: 37.39028 **LONGTITUDE:** -79.55587

The upper limit is north of Reba, Va on Campbells Mountain off Rt. 614 (Montvale Quad). The downstream end is ~0.25 miles west of the Rt. 43 Bridge where Sheeps Creek and Stoney Creek join to form the Big Otter River (Peaks of Otter Quad).

Note: Slight changes in 1998 segment mileage are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Metals in sediment	NPS - Agriculture (Pasture & Grazing) / Wildli
	Unknown

SUMMARY:

Swimming Use
The Sheep Creek fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenario is complete. The segment is therefore delisted for fecal coliform with the US Environmental Protection Agency (EPA) approval of the study on 02/02/2001. The entirety of the approved study and allocations can be viewed at http://www.deq.state.va.us. The next step in the process is the development of an Implementation Plan.

The original 303(d) Listing for fecal coliform in 1996 and again in 1998 was based on ambient data collections showing contravention of the 1000 n/100 ml fecal coliform standard in greater than 25 percent of the samples collected. The segment although delisted with the US EPA TMDL Study approval remains impaired for the swimming use.

The segment brackets station 4ASEE003.16 (at Rt. 680 Bridge, Bedford Co.) where eight of 23 samples exceed the 1000 n/100 ml fecal coliform bacteria criterion. The segment does not support the swimming use.

Aquatic Life Use
A 4.71 mile aquatic life use 'Threatened' segment extends from upstream of the Pennicks Mill community (37°23'31" / 079°37'14") downstream to the confluence of Sheeps and Stony Creeks. A single exceedance from six sediment collections is found at station 4ASEE003.15. Silver (Ag, SV=3.7 ppm, max. 6) exceeds the 1995 NOAA effect range- median (ER-M) sediment screening value (SV). The exceedance is recorded in August 1997. The segment is fully supporting, but threatened for the aquatic life use.

Agricultural and wildlife nonpoint source direct deposition are the primary sources of fecal coliform bacteria as determined by the TMDL Study in critical conditions.

The source of the sediment silver (Ag) exceedance is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford

STREAM NAME: Elk Creek

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L25R_ECR01A00 **TMDL MAP ID:** VAW-L25R-01

SEGMENT SIZE: 7.28 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2000 - 2002

UPSTREAM LIMIT:

DESCRIPTION: Near Rt. 643 Bridge west of Forest.

RIVER MILE: 7.28

LATITUDE: 37.34028 **LONGTITUDE:** -79.35910

DOWNSTREAM LIMIT:

DESCRIPTION: Elk Cr. mouth on the Big Otter R.

RIVER MILE: 0.00

LATITUDE: 37.31028 **LONGTITUDE:** -79.39403

The upper limit of the segment is near Rt. 643 west of Forest (Forest Quad). The downstream limit is Elk Creek's mouth on the Big Otter River (Goode Quad).

Note: Slight changes in 1998 segment mileage are due to the use of the National Hydrography Dataset (NHD).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus	NPS - Urban/Agriculture
	NPS - Agriculture

SUMMARY:

Swimming Use
The Elk Creek fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenario is complete. The segment is therefore delisted for fecal coliform with the US Environmental Protection Agency (EPA) approval of the study on 02/02/2001. The entirety of the approved study and allocations can be viewed at http://www.deq.state.va.us. The next step in the process is development of an Implementation Plan.

The 1998 303(d) Listing basis for fecal coliform is based on ambient data collections showing contravention of the 1000 n/100 ml fecal coliform standard in greater than 25 percent of the samples collected. The segment, although delisted with the US EPA TMDL Study approval, remains impaired for the swimming use.

Fecal coliform bacteria cause the segment to only partially meet the swimming use. The segment brackets station 4AECR003.02 located at the Rt. 668 Bridge. Six of 25 samples exceed the 1000 n/100 ml instantaneous criterion.

Aquatic Life Use
Two total phosphorus exceedances of the 0.20 mg/l threshold from 18 samples cause the segment to be fully supporting, but threatened. Each exceedance is 0.30 mg/l occurring in September 1997 and April 2000. The segment brackets station 4AECR003.02 in Bedford County.

Agricultural and wildlife nonpoint source direct deposition are the primary sources of fecal coliform bacteria as determined by the TMDL Study at critical conditions. The upper portion of the watershed is experiencing population growth/urbanization in the Forest Area.

The source of total phosphorus is believed to be from agricultural nonpoint source runoff.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Bedford

STREAM NAME: Big Otter River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAW-L27R_BOR01A00 **TMDL MAP ID:** VAW-L27R-01

SEGMENT SIZE: 5.39 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2000 - 2001

UPSTREAM LIMIT:

DESCRIPTION: Little Otter R. mouth on Big Otter R.

RIVER MILE: 19.37

LATITUDE: 37.27444 **LONGTITUDE:** -79.40525

DOWNSTREAM LIMIT:

DESCRIPTION: Buffalo Cr. mouth on the Big Otter R.

RIVER MILE: 13.98

LATITUDE: 37.23528 **LONGTITUDE:** -79.32663

The segment begins at the mouth of the Little Otter River on the Big Otter River extending downstream to the confluence of Buffalo Creek with the Big Otter River. The segment spans the Goode, Forest and Lynch Station Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
Fish Tissue - PCBs	NPS - Agriculture
	Unknown

SUMMARY:

Swimming Use
The Big Otter River fecal coliform bacteria Total Maximum Daily Load (TMDL) Study and allocation scenario is complete. The TMDL study encompasses the drainage in watershed VAW-L27R. No swimming use impairments were noted in the 1998 303(d) List for the Big Otter River in watershed VAW-L27R. However the TMDL Study states that upstream watershed implemetation and elimination of straight pipes will result in achievement of the water quality standard. The segment is therefore delisted, eg. not in need of a TMDL Study, with the US Environmental Protection Agency (EPA) approval of the study on 02/02/2001. The 2002 5.39 mile fecal coliform portion is added to the original 1998 303(d) Listing (13.98 miles) for a total of 19.37 miles. The entire swimming impaired segment spans from the mouth of Little Otter River on the Big Otter downstream the Big Otter River confluence with the Staunton (Roanoke) River. The entirety of the approved study and allocations can be viewed at http://www.deq.state.va.us. 2002 Assessment data are below.

Exceedances of the fecal coliform bacteria instantaneous criterion of 1000 n/100 ml are found at station 4ABOR016.26 (Rt. 24 Bridge). Four of 21 samples exceed. The segment does not support the swimming use. A 2002 addition.

Fish Consumption Use
Fish tissue collections at 4ABOR012.18 (VAW-L28R) found polychlorinated biphenyls (PCBs) in excess of the human health-risk carcinogenic screening value (SV) of 54 parts per billion (ppb) in one species; Redhorse Sucker @ 60.60 ppb. Other sampled species record PCBs in Redbreast Sunfish @ 4.10 and Roanoke Hogsucker @ 0.64 ppb both below the SV. The waters are fully supporting, but threatened for a total of 19.37 miles.

Swimming Use
The source of fecal coliform bacteria is believed to be agricultural nonpoint source runoff from upstream watersheds primarily direct deposition from cattle and pasture land runoff. Wildlife contributions are also noted in the TMDL Study.

Fish Consumption Use

The exact source(s) of PCB contamination are unknown.

The Virginia Department of Health (VDH) action level for PCBs is 600 ppb in fish tissue. PCBs are a group of man-made industrial chemicals that exist as a mixture and may contain up to 209 individual compounds. Since 1977, PCBs have not been produced in the U.S., but are still found in the environment. PCBs were once widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell

STREAM NAME: Big Otter River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L28R_BOR02A00 **TMDL MAP ID:** VAC-L28R-02

SEGMENT SIZE: 2.2 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 1998 - 2001

UPSTREAM LIMIT:

DESCRIPTION: Campbell County USA Otter River WTP

RIVER MILE: 11.60

LATITUDE: 37.20722 **LONGTITUDE:** -79.30056

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth of Flat Creek

RIVER MILE: 9.40

LATITUDE: 37.19944 **LONGTITUDE:** -79.28472

Big Otter River mainstem from the Campbell County USA Otter River WTP downstream to mouth of Flat Creek.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Fish Tissue SV, PCBs	NPS - Agriculture
	Unknown

SUMMARY:

This segment of Big Otter River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 14/61 samples taken at 4-ABOR000.6. Exceedance of the US EPA human health-risk based screening value (SV) of 50 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue was recorded in species from collected fish samples.

The major source of the fecal coliform is pasture grazing.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell

STREAM NAME: Big Otter River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L28R_BOR01A00 **TMDL MAP ID:** VAC-L28R-01

SEGMENT SIZE: 9.4 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 1998 - 2001

UPSTREAM LIMIT:

DESCRIPTION: Flat Creek mouth on Big Otter River

RIVER MILE: 9.40

LATITUDE: 37.13250 **LONGTITUDE:** -79.25194

DOWNSTREAM LIMIT:

DESCRIPTION: Big Otter River confluence with Roanoke River

RIVER MILE: 0.00

LATITUDE: 37.19389 **LONGTITUDE:** -79.27083

The segment begins at the mouth of Flat Creek on the Big Otter River and ends at the mouth of the Big Otter River on the Staunton (Roanoke) River. The segment spans the Lynch Station and Castle Craig Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Sediment SV	NPS - Agriculture
	Unknown
Exceedance of Fish Tissue SV, PCBs	

SUMMARY:

This segment of Big Otter River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 14/61 samples taken at 4-ABOR000.6. Exceedance of the US EPA human health-risk based screening value (SV) of 50 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue was recorded in species from collected fish samples.

The major source of the fecal coliform is pasture grazing.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell

STREAM NAME: Big Otter River

HYDROLOGIC UNIT: 03010101

SEGMENT ID.: VAC-L28R_BOR03A00 **TMDL MAP ID:** VAC-L28R-03

SEGMENT SIZE: 2.38 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Buffalo Cr. mouth on the Big Otter R.

RIVER MILE: 13.98

LATITUDE: 37.23528 **LONGTITUDE:** -79.32663

DOWNSTREAM LIMIT:

DESCRIPTION: Campbell County USA Otter River WTP

RIVER MILE: 11.6

LATITUDE: 37.20722 **LONGTITUDE:** -79.30056

Big Otter River mainstem from the Buffalo Creek mouth on Big Otter River downstream to the Campbell County USA Otter River WTP.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Fish Tissue SV, PCBs	NPS - Agriculture
	Unknown

SUMMARY:

This segment of Big Otter River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 14/61 samples taken at 4-ABOR000.6. Exceedance of the US EPA human health-risk based screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue was recorded in species from collected fish samples.

The major source of the fecal coliform is pasture grazing.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell, Pittsylvania

STREAM NAME: Staunton (Roanoke) River

HYDROLOGIC UNIT: 03010102

SEGMENT ID.: VAC-L30R_ROA06A00 **TMDL MAP ID:** VAC-L30R-01

SEGMENT SIZE: 7.01 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Seneca Creek mouth

RIVER MILE: 110.85

LATITUDE: 37.08972 **LONGTITUDE:** -79.12333

DOWNSTREAM LIMIT:

DESCRIPTION: Buffalo Creek mouth

RIVER MILE: 103.84

LATITUDE: 37.03861 **LONGTITUDE:** -79.02111

Staunton (Roanoke) River mainstem from the Senaca Creek mouth downstream to the Buffalo Creek confluence.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Organics in fish tissue (H. epoxide - 7.01 miles)	VDH Fish Consumption Advisory
	Unknown

SUMMARY:

The Virginia Department of Health (VDH) has issued a 'Health Advisory' for fishing in this segment of the Staunton (Roanoke) River based on fish tissue analysis. The segment only partially supports the fish consumption use for Smallmouth Bass, Channel Catfish, Striped Bass, White Bass and Carp. Fish tissue analysis reveals polychlorinated biphenyls (PCBs) levels high enough for issuance of an advisory. The VDH advises limiting the amount of fish consumed to two 8 oz. portions per month. Young children and pregnant women are advised not to eat any of these fish. The total VDH 'Health Advisory' extends from Leesville Dam on downstream below Clover, Virginia; 5.4 miles downstream of the Route 360 Bridge. A total length of approximately 84 miles.

Exceedance of the US EPA human health-risk based screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue is found at 4AROA097.07 (8 species) and 4AROA096.62 (1 species).

An additional 2002 Partial Support of the fish consumption use is also found within this segment, 7.01 miles from Seneca Creek to Buffalo Creek. The total length extends from the mouth of the Big Otter River downstream to the mouth of Falling River; a distance of 30.29 miles. Exceedances of Heptachlor epoxide (SV 10 ppb) from 1998 fish tissue collections at station 4AROA125.59 (downstream of the Big Otter River) reveal 3 species above the SV. They are one Walleye 12.04, one Channel Cat - 25.03 and one Redhorse Sucker - 10.06 ppb. Station 4AROA108.09 in Long Island reports exceedances in 5 species; a Smallmouth Bass (23.99), two Channel Catfish (26.28 max.), three Flathead Catfish (95.93 max.), a Redhorse Sucker (15.22) and a Carp (25.01 ppb). And a single species at station 4AROA097.07 in Brookneal finds a Redhorse Sucker with 15.22 ppb.

1999 fish tissue collections at station 4AROA117.09 (near Taber) find 2 species in excess of the SV; a Redhorse Sucker 11.01 and a Channel Catfish 17.96 ppb. The VDH Advisory applies only to PCBs.

Results of fish tissue and sediment sampling from the special PCB ongoing study in the Staunton (Roanoke) River are posted at the DEQ website, http://www.deq.state.va.us.

The exact source(s) of PCB contamination is unknown. One stormwater and one legacy industrial source has been identified in the segment. Investigations to discover potential sources continue as do fish tissue and sediment sampling studies.

The exact source(s) of heptachlor epoxide are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Campbell, Halifax, Charlotte

STREAM NAME: Staunton (Roanoke) River

HYDROLOGIC UNIT: 03010102

SEGMENT ID.: VAC-L30R_ROA05A00 **TMDL MAP ID:** VAC-L30R-02

SEGMENT SIZE: 47.72 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Buffalo Creek mouth

RIVER MILE: 103.84

LATITUDE: 37.03861 **LONGTITUDE:** -79.02111

DOWNSTREAM LIMIT:

DESCRIPTION: Pipeline crossing approximately 5.4 miles downsteam of the Route 360 bridge

RIVER MILE: 56.12

LATITUDE: 37.03778 **LONGTITUDE:** -78.99611

Staunton (Roanoke) River mainstem from the Buffalo Creek mouth downstream to 5.4 miles downstream of the Route 360 Bridge.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
VDH Health Advisory (PCBs), (Heptachlor epoxide - 8.08 miles)	NPS - Agriculture, Urban Nonpoint Source Po
	VDH Fish Consumption Advisory, Unknown
Exceedance of Sediment SV - 10.91 miles	Unknown

SUMMARY:

This segment of Staunton (Roanoke) River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceed the 1000 /100 ml instantaneous criterion in 9/60 samples at 4AROA097.46, 4/27 at 4AROA067.91 and in 12/57 samples at 4AROA059.12. The upper portions of the fecal coliform impairment in watershed VAC-L30R are new in 2002.

The Virginia Department of Health (VDH) has issued a 'Health Advisory' for fishing in this segment of the Staunton (Roanoke) River based on fish tissue analysis. The segment only 'Partially Supports' the fish consumption use for Smallmouth Bass, Channel Catfish, Flathead Catfish, Striped Bass, White Bass, and Carp. Fish tissue analysis reveals PCB levels high enough for issuance of an advisory. The VDH advises limiting the amount of fish consumed to two 8 oz. portions per month. Young children and pregnant women are advised not to eat any of these fish. The total VDH 'Health Advisory' extends from Leesville Dam on downstream below Clover, Virginia; 5.4 miles downstream of the Route 360 Bridge. A total length of approximately 84 miles.

Exceedance of the US EPA human health-risk based screening value (SV) of 54 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue is found from 1998 collections at 4AROA097.07 (8 species), 4AROA096.62 (1 species), 4AROA067.91 (3 species) and 4AROA052.69 (4 species).

1999 fish tissue results also find PCB SV exceedances at 4AROA067.91 (3 species), 4AROA052.69 (8 species).

An additional Partial Support of the fish consumption use is also found within this segment, 8.08 miles from Buffalo Creek to Falling River. The total length extends from the mouth of the Big Otter River downstream to the mouth of Falling River; a distance of 30.29 miles. Exceedances of Heptachlor epoxide (SV 10 ppb) from 1998 fish tissue collections at station 4AROA108.09 in Long Island reports exceedances in 5 species; a Smallmouth Bass (23.99), two Channel Catfish (26.28

max.), three Flathead Catfish (95.93 max.), a Redhorse Sucker (15.22) and a Carp (25.01 ppb). And a single species at station 4AROA097.07 in Brookneal finds a Redhorse Sucker with 15.22 ppb.

A 10.91 mile aquatic life use 'Threatened' segment extends from the Buffalo Creek confluence downstream to the mouth of Childrey Creek on the Staunton (Roanoke) River (36°59'24" / 78°54'01"). Exceedance of the 1995 NOAA effect-range median (ER-M) screening value for PCBs (180 ppb) is found in sediment samples at 4AROA097.21, 4AROA097.07 & 4AROA096.62.

Results of fish tissue and sediment sampling from the special PCB ongoing study in the Staunton (Roanoke) River are posted at the DEQ website, http://www.deq.state.va.us.

The source of the fecal coliform is agriculture and urban runoff. The exact source(s) of PCB and Heptachlor epoxide are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Patrick

STREAM NAME: Little Dan River

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L42R_LDR01A02 **TMDL MAP ID:**

SEGMENT SIZE: 6.79 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Just above the mouth of Pigg Creek.

RIVER MILE: 7.67

LATITUDE: 36.61083 **LONGTITUDE:** -80.38969

DOWNSTREAM LIMIT:

DESCRIPTION: VA / NC State Line.

RIVER MILE: 0.88

LATITUDE: 36.54778 **LONGTITUDE:** -80.38273

The segment extends from just above the Pigg Creek mouth downstream to the VA / NC stateline. The segment spans the Claudeville and Sturat SE Quads.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
DDT	Unknown

SUMMARY:

An exceedance of the 1995 NOAA effect range- median (ER-M) sediment organic screening value (SV) for DDT in parts per billion (ppb) at 4ALDR001.00 (Little Dan River Near Road Off Rt. 1422). The DDT (SV= 7 ppb) exceeds in 1 sample with a value of 8.02 ppb. The waters are fully supporting, but threatened as a result.

The source of the DDT sediment contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Henry, Patrick

STREAM NAME: South Fork Mayo River

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L45R_SMR01A00 **TMDL MAP ID:**

SEGMENT SIZE: 10.86 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Confluence of Spoon Cr.

RIVER MILE: 11.16

LATITUDE: 36.56778 **LONGTITUDE:** -80.10555

DOWNSTREAM LIMIT:

DESCRIPTION: VA / NC State Line.

RIVER MILE: 0.30

LATITUDE: 36.54222 **LONGTITUDE:** -79.99232

The segment begins at the confluence of Spoon Creek (watershed boundary) and extends downstream to the VA / NC State Line. The entire segment is on the Spencer Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
benzo(a) pyrene	Unknown

SUMMARY:

1999 routine fish collections at 4ASMR004.17 (Rt. 695 Bridge) find benzo(a) pyrene in excess of the human health-risk carcinogenic screening value (SV) of 15 ppb in tissue from a single species - Redbreast Sunfish at 77.87 ppb.

The source of the contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Henry

STREAM NAME: North Fork Mayo River

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L46R_NMR01A00 **TMDL MAP ID:**

SEGMENT SIZE: 4.38 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Horsepasture Creek mouth.

RIVER MILE: 4.52

LATITUDE: 36.57889 **LONGTITUDE:** -79.99019

DOWNSTREAM LIMIT:

DESCRIPTION: VA / NC State Line

RIVER MILE: 0.14

LATITUDE: 36.54222 **LONGTITUDE:** -79.98822

The segment extends from the mouth of Horsepasture Creek downstream to the VA / NC State Line. The entire segment is on the Price Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - Arsenic	Unknown

SUMMARY:

1999 routine fish collections at 4ANMR002.60 (Rt. 629 Bridge at Gage) find arsenic (As) in excess of the updated Integrated Risk Information System (IRIS) human health-risk carcinogenic screening value (SV) of 0.07 ppm in tissue from a single Sucker species at 0.70 ppm.

The source of the contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Franklin, Patrick, Henry

STREAM NAME: Smith River - Philpott Reservoir

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L51L_SRE01A02 **TMDL MAP ID:** VAW-L51L-01N

SEGMENT SIZE: 2350 - Acres

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Philpott Reservoir backwaters.

RIVER MILE: 58.94

LATITUDE: 36.84611 **LONGTITUDE:** -80.12902

DOWNSTREAM LIMIT:

DESCRIPTION: Philpott Reservoir Dam.

RIVER MILE: 45.25

LATITUDE: 36.78083 **LONGTITUDE:** -80.02760

The segment begins at the backwaters of Philpott Reservoir and extends downstream to the Phillpott Dam. The entire segment is on the Philpott Reservoir Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened, Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Total Phosphorus - 497.68 acres	Natural/Stratification
	Natural/Stratification
Metals in sediment - 1107.82 acres	Unknown

SUMMARY:

Stations presented below are denoted with suffixes of 'TL' - Top Layer and BL' - Bottom Layer collections. Their locations are: 4ASRE056.06 - Union Church Bridge, 4ASRE052.31 - Horseshoe Point, 4ASRE048.98 - Goose Point and 4ASRE046.90 - Above Philpott Dam.

Top layer: Total phosphorus exceedances of the 0.05 mg/l threshold for lakes are found at 4ASRE056.06-TL causing 497.68 acres or 6.45 miles to be fully supporting, but threatened. Four of 28 total phosphorus samples exceed the threshold. Each occurrence is at 0.10 mg/l. The 'Threatened' portion extends from Philpott Reservoir backwaters downstream to just below the Beards Creek confluence (36°50'49.02" / 080°04'33.98").

Bottom layer: Dissolved oxygen in the bottom layer of the reservoir exceeds the 4.0 mg/l minimum criterion for Class IV waters. Exceedances occur in the late spring, summer and early fall. Dissolved oxygen depletion below the thermocline is a natural occurrence in reservoirs. Water Quality Standards do not specifically address the maintenance of dissolved oxygen levels (stratification) in a reservoir bottom layer. The minimum criterion, based on Class of water, applies to all waters in the Commonwealth. 4ASRE056.06-BL reports seven excursions from 17 measurements, 4ASRE052.31-BL 13 of 30, 4ASRE048.98-BL 11 of 30 and 4ASRE046.90-BL exceeds the minimum in 10 of 27. There are no current data for the Goblintown Creek arm of the reservoir. This portion of the reservoir was not assessed. The remaining waters do not support the aquatic life use based on the existing Class IV dissolved oxygen minimum criterion and the natural depletion of oxygen at depth in reservoirs.

Total phosphorus exceedances of the 0.05 mg/l threshold for lakes are found at 4ASRE056.06-BL causing 497.68 acres to be fully supporting, but threatened. Two of 19 total phosphorus samples exceed the threshold. Each occurrence is at 0.07 mg/l. The 'Threatened' portion extends from Philpott Reservoir backwaters downstream to just below the Beards Creek confluence.

Exceedances of the 1995 NOAA effect range- median (ER-M) sediment metal screening value (SV) for nickel are found at 4ASRE056.06 (Ni, SV=51.60 ppm, 1 of 7 samples 52.7 max.), and 4ASRE052.31 (Ni, SV=51.60 ppm, 1 of 4 samples 52.3

max.). 1,107.82 acres or 10.42 miles are fully supporting, but threatened as a result. The sediment 'Threatened' segment extends from the backwaters of Philpott Reservoir downstream to just above the mouth of Goblintown Creek (37°48'46.09" / 080°03'32.72").

Total phosphorus exceedances are believed naturally occuring in Philpott Reservoir.

Bottom dissolved oxygen depletion occurs naturally in reservoirs due to stratification.

The source of the sediment nickel contamination is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania, Danville, City of

STREAM NAME: Sandy Creek Middle

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L59R_SCR01A02 **TMDL MAP ID:** VAC-L59R-01

SEGMENT SIZE: 5.54 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Little Sandy Creek mouth

RIVER MILE: 5.54

LATITUDE: 36.63194 **LONGTITUDE:** -79.43806

DOWNSTREAM LIMIT:

DESCRIPTION: convluence of Sandy Creek on Dan River

RIVER MILE: 0.00

LATITUDE: 36.59083 **LONGTITUDE:** -79.41333

Sandy Creek mainstem from the Little Sandy Creek mouth downstream to the confluence of Sandy Creek on the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Sediment SV	Unknown

SUMMARY:

This segment was assessed as fully supporting but threatened due to an exceedance of the US EPA screening value (SV) of 6.0 parts per billion (ppb) for chlordane in sediment. A value of 6.47 ppb was recorded at 4ASCR000.16-B.

The source of the chlordane is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania

STREAM NAME: Dan River, Lower

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L60R_DAN01A00 **TMDL MAP ID:** VAC-L60R-01

SEGMENT SIZE: 1.82 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: VA/NC State Line

RIVER MILE: 42.82

LATITUDE: 37.54194 **LONGTITUDE:** -79.21472

DOWNSTREAM LIMIT:

DESCRIPTION: Watershed L60R/L62R boundary

RIVER MILE: 41.00

LATITUDE: 36.56694 **LONGTITUDE:** -79.21639

Dan River mainstem from VA/NC State Line downstream to watershed L60R/L62R boundary downstream of the mouth of Mineral Springs Branch.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Fish Tissue SV, PCBs, VDH Health Advisory (PCBs)	NPS - Agriculture
Fecal Coliform	VDH Fish Consumption Advisory
Exceedance of Nutrient SV	

SUMMARY:

This segment of Dan River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 20/58 samples taken at 4ADAN042.80. The segment is partially supporting the fish consumption use due to a fishing advisory issued by Virginia Department of Health (VDH) on 12/27/99. The advisory on the Dan River begins at the Virginia/North Carolina border north of Virginia Route 62 downstream to Kerr Reservoir at Staunton River State Park. Flathead and channel catfish taken from these waters may contain PCBs. VDH advises the public to eat no more than two 8 oz meals of these fish per month. The segment is fully supporting but threatened for the aquatic life use due to exceedances of the nutrient screening value. Total phosphorus exceeded the screening value in 7/58 samples taken at 4ADAN042.80.

The source of the fecal coliform is agriculture. VDH has issued a fish consumption advisory due to PCBs.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania, Danville, City of

STREAM NAME: Dan River

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L60R_DAN03A02 **TMDL MAP ID:** VAC-L60R-03

SEGMENT SIZE: 4.54 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: confluence of Sandy Creek

RIVER MILE: 57.89

LATITUDE: 36.56028 **LONGTITUDE:** -79.36222

DOWNSTREAM LIMIT:

DESCRIPTION: Danville Northside POTW

RIVER MILE: 53.35

LATITUDE: 36.58806 **LONGTITUDE:** -79.41778

Dan River mainstem from the confluence of Sandy Creek downstream to the Danville Northside POTW.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - PCBs	Unknown

SUMMARY:

This segment was assessed as fully supporting but threatened. Exceedance of the US EPA human health-risk based screening value (SV) of 50 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue was recorded in species from collected fish samples at 4ADAN054.03 (1 species).

The source of PCBs is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Pittsylvania, Danville, City of

STREAM NAME: Dan River Middle

HYDROLOGIC UNIT: 03010103

SEGMENT ID.: VAW-L60R_DAN02A00 **TMDL MAP ID:** VAC-L60R-02

SEGMENT SIZE: 1.79 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Danville Northside POTW

RIVER MILE: 53.35

LATITUDE: 36.54222 **LONGTITUDE:** -79.34389

DOWNSTREAM LIMIT:

DESCRIPTION: VA/NC State Line

RIVER MILE: 51.56

LATITUDE: 36.56028 **LONGTITUDE:** -79.36222

Dan River mainstem from Danville Northside POTW downstream to VA/NC State Line (exiting Virginia).

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - PCBs	Unknown

SUMMARY:

This segment was assessed as fully supporting but threatened. Exceedance of the US EPA human health-risk based screening value (SV) of 50 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue was recorded in species from collected fish samples at 4ADAN054.03 (1 species).

The source of PCBs is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Halifax

STREAM NAME: Dan River

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L62R_DAN02A98 **TMDL MAP ID:** VAC-L62R-01

SEGMENT SIZE: 12.13 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Mineral Spring Branch

RIVER MILE: 41.00

LATITUDE: 36.56083 **LONGTITUDE:** -79.21639

DOWNSTREAM LIMIT:

DESCRIPTION: Route 658 Bridge

RIVER MILE: 28.87

LATITUDE: 36.64306 **LONGTITUDE:** -79.08972

Dan River from Mineral Springs Branch at the L60R/L62R watershed boundary to Route 658 bridge

CLEAN WATER ACT GOAL AND USE SUPPORT:

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
PCBs	Unknown
	VDH Fish Consumption Advisory

SUMMARY:

This segment of Dan River is not supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 20/58 samples taken at the Route 62 bridge (4ADAN042.80). The segment is partially supporting the fish consumption use due to a Fish Consumption Advisory issued by Virginia Department of Health (VDH) on 12/27/99. Flathead and channel catfish taken from these waters may contain PCBs. VDH advises eating no more than two 8 oz portions of these fish per month.

Fish and sediment data collected in the spring of 1999 indicated exceedances of screening values for PCB, chlordane, and DDT in fish tissue in several fish species collected at South Boston.

The sources of fecal coliform and PCBs are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Halifax

STREAM NAME: Dan River

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L62R_DAN03A98 **TMDL MAP ID:** VAC-L63R-02

SEGMENT SIZE: 2.73 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Route 658 bridge

RIVER MILE: 28.87

LATITUDE: 36.64306 **LONGTITUDE:** -79.09000

DOWNSTREAM LIMIT:

DESCRIPTION: Birch Creek

RIVER MILE: 26.14

LATITUDE: 36.66333 **LONGTITUDE:** -79.05472

Dan River from Route 658 Bridge to Birch Creek

CLEAN WATER ACT GOAL AND USE SUPPORT:

IMPAIRMENT CAUSE:	**IMPAIRMENT SOURCE**
PCBs	Unknown
	VDH Fish Consumption Advisory

SUMMARY:

Segment assessed not supporting of the Swimmable use support goal based on excessive fecal coliform standard violations recorded at the Route 62 bridge (4ADAN042.80 - 20/58).

Fish and sediment data collected in the spring of 1999 indicated exceedances of screening values for PCB, chlordane, and DDT in fish tissue in several fish species collected at South Boston.

On December 27, 1999 VDH issues a fish consumption advisory for the Dan River from the Kerr Reservoir at Staunton State Park upstream to the VA-NC state line. The advisory warns about the presence of PCBs in channel and flathead catfish.

The sources of the fecal coliform and PCBs are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Halifax

STREAM NAME: Lawsons Creek

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L64R_LSN02A02 **TMDL MAP ID:** VAC-L64R-03

SEGMENT SIZE: 7 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Jerimy Creek

RIVER MILE: 7.00

LATITUDE: 36.56639 **LONGTITUDE:** -79.05111

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth on Dan River

RIVER MILE: 0.00

LATITUDE: 36.68694 **LONGTITUDE:** -78.91667

Lawsons Creek from Jerimy Creek to mouth on Dan River

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Fish Tissue SV	Unknown

SUMMARY:

Exceedance of the US EPA human health-risk based screening value (SV) of 15 parts per billion (ppb) for Benzo (a) pyrene in fish tissue was recorded in species from collected fish samples at 4ALSN001.04.

The source is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Halifax

STREAM NAME: Dan River

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L64R_DAN04A98 **TMDL MAP ID:** VAC-L64R-01

SEGMENT SIZE: 10.38 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Birch Creek

RIVER MILE: 26.14

LATITUDE: 36.66333 **LONGTITUDE:** -79.05472

DOWNSTREAM LIMIT:

DESCRIPTION: South Boston raw water intake location

RIVER MILE: 15.76

LATITUDE: 36.69222 **LONGTITUDE:** -78.90417

Dan River from Birch Creek to the South Boston raw water intake location

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:

PCBs

Exceedance of Nutrient SV

IMPAIRMENT SOURCE

Unknown

VDH Fish Consumption Advisory

SUMMARY:

Segment assessed not supporting of the Swimmable use support goal based on excessive fecal coliform standard violations recorded at the Route 501 bridge (4ADAN015.30 - 23/58) and at Route 659 Bridge (4ABIR001.00-7/26). In addition, there were 8 exceedances of the phosphorus screening value in 58 total samples at 4ADAN015.30.

Fish and sediment data collected in the spring of 1999 indicated exceedances of screening values for PCB, chlordane, and DDT in fish tissue in several fish species collected at South Boston.

On December 27, 1999 VDH issued a fish consumption advisory for the Dan River from the Kerr Reservoir at Staunton State Park upstream to the VA-NC state line. The advisory warns about the presence of PCBs in channel and flathead catfish.

The sources of the fecal coliform, PCBs, and phosphorus are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Halifax

STREAM NAME: Hyco River

HYDROLOGIC UNIT: 03010104

SEGMENT ID.: VAC-L74R_HYC01A00 **TMDL MAP ID:** VAC-L74R-01

SEGMENT SIZE: 21.13 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Bluewing Creek

RIVER MILE: 21.13

LATITUDE: 36.62083 **LONGTITUDE:** -78.83806

DOWNSTREAM LIMIT:

DESCRIPTION: Mouth

RIVER MILE: 0.00

LATITUDE: 36.68778 **LONGTITUDE:** -78.77722

Hyco River from Bluewing Creek downstream to its mouth at the Dan River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
PCBs	Unknown

SUMMARY:

This segment of Hyco River is partially supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 6/57 at 4AHYC002.70. The segment was assessed as fully supporting but threatened for the fish consumption use support goal due to 1999 and 2000 fish tissue studies. The studies indicated PCBs were present in 1 species.

The sources of fecal coliform and PCBs are unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Mecklenburg

STREAM NAME: Little Buffalo Creek

HYDROLOGIC UNIT: 03010102

SEGMENT ID.: VAC-L76R_LFF01A00 **TMDL MAP ID:** VAC-L76R-01

SEGMENT SIZE: 2.56 - Miles

INITIAL LISTING: 2002 **TMDL Schedule:** 2010 - 2014

UPSTREAM LIMIT:

DESCRIPTION: Headwaters

RIVER MILE: 2.56

LATITUDE: 36.60722 **LONGTITUDE:** -78.62944

DOWNSTREAM LIMIT:

DESCRIPTION: Buffalo Creek/Kerr Reservoir

RIVER MILE: 0.00

LATITUDE: 36.63611 **LONGTITUDE:** -78.63139

Little Buffalo Creek from its headwaters to Buffalo Creek, an arm of Kerr Reservoir.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Exceedance of Nutrient SV	Unknown

SUMMARY:

This segment of Little Buffalo Creek is not supporting the swimming use due to excessive counts of fecal coliform bacteria. Counts exceeded the instantaneous standard in 9/27 samples taken at 4ALFF001.85. This segment is threatened for the aquatic life use due to exceedances of the nutrient screening value. Total phosphorus exceeded the screening value in 6/26 samples taken at 4ALFF001.85.

Source is believed to be Newton Mobile Home Court. Construction of an upgraded sewage treatment plant is ongoing and should be completed in February 2002. Additional monitoring will be performed to determine whether fecal coliform and phosphorus levels continue to violate water quality standards.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Mecklenburg

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010106

SEGMENT ID.: VAC-L78R_ROA06A98 **TMDL MAP ID:** VAC-L78R-01

SEGMENT SIZE: 5.85 - Miles

INITIAL LISTING: 1998 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: John H. Kerr Dam

RIVER MILE: 18.04

LATITUDE: 36.59833 **LONGTITUDE:** -78.29861

DOWNSTREAM LIMIT:

DESCRIPTION: Route 1 Bridge

RIVER MILE: 12.19

LATITUDE: 36.60667 **LONGTITUDE:** -78.20611

Headwaters of Lake Gaston from the John H. Kerr Dam to the I-85 bridge.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
PCBs	PS - Upstream Impoundment
	Hypolimnetic Waters Release
	Contaminated Sediments

SUMMARY:

This segment of Roanoke River is not supporting the aquatic life use support goal based on water quality monitoring just downstream of the dam (4AROA018.04) and at the Route 1 bridge (4AROA012.08). At 4AROA018.04, 19 violations of the DO standard were recorded in 64 samples collected, and at 4AROA012.08, there were 13 recorded violations of the DO standard in 38 samples collected. A special study conducted in 1995 identified the Route I-85 bridge as the approximate downstream limit of the impairment.

The DO standard violations in this segment are seasonal, occurring only during summer months, and are attributed to the releases of hypolimnetic water releases through John H. Kerr Dam when the reservoir is stratified.

To correct the DO deficiencies in this segment, background DO levels need to be maintained at a minimum of 5.0 mg/l, which represents Virginia's water quality standard for average daily DO concentration.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Mecklenburg

STREAM NAME: Roanoke River

HYDROLOGIC UNIT: 03010106

SEGMENT ID.: VAC-L79R_ROA07A98 **TMDL MAP ID:** VAC-L79R-04

SEGMENT SIZE: 5.09 - Miles

INITIAL LISTING: 1996 **TMDL Schedule:** 2001 - 2010

UPSTREAM LIMIT:

DESCRIPTION: Route 1 Bridge

RIVER MILE: 12.19

LATITUDE: 36.60667 **LONGTITUDE:** -78.20611

DOWNSTREAM LIMIT:

DESCRIPTION: I-85 Bridge

RIVER MILE: 7.10

LATITUDE: 36.57167 **LONGTITUDE:** -79.15583

Roanoke River from Route 1 Bridge to I-85 Bridge

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Dissolved Oxygen	PS - Upstream Impoundment
PCBs	Hypolimnetic Waters Release
	Contaminated Sediments

SUMMARY:

This segment of the Roanoke River is not supporting the aquatic life use support goal based on water quality monitoring just downstream of the dam (4AROA018.04) and at the Route 1 bridge (4AROA012.08). At 4AROA018.04, 19 violations of the DO standard were recorded in 64 samples collected, and at 4AROA012.08, there were 13 recorded violations of the DO standard in 38 samples collected. A special study conducted in 1995 identified the Route I-85 bridge as the approximate downstream limit of the impairment. The segment is fully supporting but threatened for fish consumption due to 1999 fish tissue studies that indicated PCBs in one species.

The DO standard violations in this segment are seasonal, occurring only during summer months, and are attributed to the releases of hypolimnetic water releases through John H. Kerr Dam when the reservoir is stratified.

To correct the DO deficiencies in this segment, background DO levels need to be maintained at a minimum of 5.0 mg/l, which represents Virginia's water quality standard for average daily DO concentration. The exact source of PCBs is unknown.

2002 303(d) PART 3 WATERS OF CONCERN FACT SHEET

RIVER BASIN: ROANOKE RIVER BASIN

CITY/COUNTY: Patrick

STREAM NAME: Ararat River

HYDROLOGIC UNIT: 03040101

SEGMENT ID.: VAW-M03R_ARA01A00 **TMDL MAP ID:**

SEGMENT SIZE: 5.98 - Miles

INITIAL LISTING: **TMDL Schedule:** -

UPSTREAM LIMIT:

DESCRIPTION: Upstream of Rt. 823 crossing.

RIVER MILE: 41.00

LATITUDE: 36.60639 **LONGTITUDE:** -80.52413

DOWNSTREAM LIMIT:

DESCRIPTION: VA / NC State Line.

RIVER MILE: 35.02

LATITUDE: 36.55639 **LONGTITUDE:** -80.57052

Ararat River mainstem from just upstream of the Rt. 823 crossing downstream to the VA/NC State Line. The entire segment is on the Mount Airy North Quad.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Fish Consumption Use - Threatened

IMPAIRMENT CAUSE:	IMPAIRMENT SOURCE
Fish Tissue - Arsenic	Unknown

SUMMARY:

The waters are threatened for the fish consumption use due to the exceedance of the human health-risk carcinogenic screening value (SV) of 0.07 parts per million (ppm) for arsenic (As). A 1997 fish tissue collection at station 4BARA035.13 (Rt. 739 Bridge, Near VA/NC Line) reports the exceedance at 0.50 ppm.

The source of the arsenic contamination is unknown.